(37)

No. 05-1056

Title: Microsoft Corporation, Petitioner
v.
AT&T Corp.

Docketed: February 21, 2006
Lower Ct: United States Court of Appeals for the Federal Circuit
Case Nos.: (04-1285)
Decision Date: July 13, 2005
Rehearing Denied: October 20, 2005
Questions Presented

~~Date~~	~~~~~~~~Proceedings and Orders~~~~~~~~~~~~~~~~~~~~~~~~
Jan 5 2006	Application (05A606) to extend the time to file a petition for a writ of certiorari from January 18, 2006 to February 17, 2006, submitted to Justice Stevens.
Jan 9 2006	Response to application from AT&T Corp. filed.
Jan 11 2006	Application (05A606) granted by Justice Stevens extending the time to file until February 17, 2006.
Feb 17 2006	Petition for a writ of certiorari filed. (Response due March 23, 2006)
Mar 21 2006	Consent to the filing of amici briefs in support of either party received from counsel for the petitioners.
Mar 23 2006	Motion for leave to file amicus brief filed by Software & Information Industry Association.
Mar 23 2006	Brief of respondent AT&T Corp. in opposition filed.
Apr 4 2006	Reply of petitioner Microsoft Corporation filed.
Apr 5 2006	DISTRIBUTED for Conference of April 21, 2006.
Apr 12 2006	Supplemental brief of respondent AT&T Corp. filed. (Distributed).
Apr 14 2006	Supplemental brief of petitioner Microsoft Corporation filed. (Distributed)
Apr 24 2006	The Solicitor General is invited to file a brief in this case expressing the views of the United States. The Chief Justice took no part in the consideration or decision of this petition.
Sep 29 2006	Brief amicus curiae of United States filed.
Oct 11 2006	DISTRIBUTED for Conference of October 27, 2006.
Oct 11 2006	Supplemental brief of respondent in response to brief of United States filed. (Distributed)
Oct 27 2006	Motion for leave to file amicus brief filed by Software & Information Industry Association GRANTED. The Chief Justice took no part in the consideration or decision of this motion.
Oct 27 2006	Petition GRANTED. The Chief Justice took no part in the consideration or decision of this petition.
Nov 7 2006	Extension of time within which to file the joint appendix and petitioner's brief on the merits to and including December 15, 2006.
Nov 16 2006	Extension of time within which to file respondent's brief on the merits to and including January 23, 2007.
Nov 28 2006	Consent to the filing of amicus briefs in support of either party received from counsel for the petitioner.
Nov 30 2006	Consent to the filing of amicus briefs in support of either party received from counsel for

the respondent.

Dec 14 2006 Brief amicus curiae of Houston Intellectual Property Law Association in support of neither party filed.

Dec 14 2006 Brief amicus curiae of Federation Internationale des Conseils en Propriete Industrielle (FICPI) filed. (TO BE REPRINTED).

Dec 14 2006 Brief amici curiae of Amazon. Com, Inc., et al. filed.

Dec 15 2006 Joint appendix filed.

Dec 15 2006 Supplemental joint appendix filed.

Dec 15 2006 Brief amicus curiae of United States filed.

Dec 15 2006 Brief amicus curiae of Yahoo, Inc. filed.

Dec 15 2006 Brief of petitioner Microsoft Corporation filed.

Dec 15 2006 Brief amicus curiae of Software & Information Industry Association filed.

Dec 15 2006 Brief amicus curiae of Bar of District of Columbia, Patent, Trademark & Copyright Section filed.

Dec 15 2006 Brief amicus curiae of Business Software Alliance filed.

Dec 15 2006 Brief amicus curiae of Shell Oil Company filed.

Dec 15 2006 Brief amicus curiae of Intel Corporation filed.

Dec 15 2006 Brief amicus curiae of Edward Lee filed.

Dec 15 2006 Brief amicus curiae of Eli Lilly and Company filed.

Dec 15 2006 Brief amicus curiae of Software Freedom Law Center filed.

Dec 15 2006 Brief amicus curiae of Intellectual Property Professors filed.

Dec 15 2006 Brief amicus curiae of American Intellectual Property Law Association filed. (To be Recovered)

Dec 15 2006 Brief amicus curiae of Autodesk, Inc. filed.

Dec 18 2006 SET FOR ARGUMENT ON Wednesday, February 21, 2007.

Dec 22 2006 Motion of the Solicitor General for leave to participate in oral argument as amicus curiae and for divided argument filed.

Jan 10 2007 Record received from U.S.C.A. for Federal Circuit. (1 box)

Jan 12 2007 Record received from U.S.D.C. for Southern District of New York. (4 boxes)

Jan 18 2007 CIRCULATED.

Jan 23 2007 Brief of respondent AT&T Corp. filed. (Distributed).

Jan 23 2007 Brief amicus curiae of BayhDole25, Inc. filed. (Distributed)

Jan 23 2007 Brief amici curiae of U.S. Philips Corporation and Philips Electronics North America Corporation filed. (Distributed)

Jan 23 2007 Brief amici curiae of Wisconsin Alumni Research Foundation, et al. filed. (Distributed)

Feb 14 2007 Reply of petitioner Microsoft Corporation filed. (Distributed)

Feb 16 2007 Motion of the Solicitor General for leave to participate in oral argument as amicus curiae and for divided argument GRANTED. The Chief Justice took no part in the consideration or decision of this motion.

Feb 21 2007 Argued. For petitioner: Theodore B. Olson, Washington, D.C.; and Daryl Joseffer, Assistant to the Solicitor General, Department of Justice, Washington, D.C. (for the United States, as amicus curiae.) For respondent: Seth P. Waxman, Washington, D.C.

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No.

IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Petition For A Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

PETITION FOR A WRIT OF CERTIORARI

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QUESTIONS PRESENTED

Title 35 U.S.C. § 271(f)(1) provides that it is an act of direct patent infringement to "suppl[y] . . . from the United States . . . components of a patented invention . . . in such manner as to actively induce the combination of such components outside of the United States."

In this case, AT&T Corp. alleges that when Microsoft Corporation's Windows software is installed on a personal computer, the programmed computer infringes AT&T's patent for a "Digital Speech Coder" system. AT&T sought damages not only for each Windows-based computer made or sold in the United States, but also, under Section 271(f)(1), for each computer made and sold abroad. Extending Section 271(f)—and consequently, the extraterritorial application of U.S. patent law—the Federal Circuit held that Microsoft infringed under Section 271(f)(1) when it exported master versions of its Windows software code to foreign computer manufacturers, who then copied the software code and installed the duplicate versions on foreign-manufactured computers that were sold only to foreign consumers. The questions presented are:

(1) Whether digital software code—an intangible sequence of "1's" and "0's"—may be considered a "component[] of a patented invention" within the meaning of Section 271(f)(1); and, if so,

(2) Whether copies of such a "component[]" made in a foreign country are "supplie[d] . . . from the United States."

PARTIES TO THE PROCEEDING AND RULE 29.6 STATEMENT

The caption contains the names of all the parties to the proceeding below.

Pursuant to this Court's Rule 29.6, undersigned counsel state that Microsoft Corporation ("Microsoft") has no parent company, and no publicly held company owns 10% or more of its stock.

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PETITION FOR A WRIT OF CERTIORARI

Petitioner Microsoft Corporation respectfully submits this petition for a writ of certiorari to review the judgment of the United States Court of Appeals for the Federal Circuit.

OPINIONS BELOW

The court of appeals' opinion is reported at 414 F.3d 1366. App., *infra*, at 1a. The order denying Microsoft's petition for rehearing en banc is unreported. *Id.* at 39a. The opinion of the United States District Court for the Southern District of New York is unpublished but is electronically reported at 2004 WL 406640. *Id.* at 20a.

JURISDICTION

The district court had jurisdiction over respondent's claims pursuant to 28 U.S.C. §§ 1331 and 1338(a). The court of appeals had jurisdiction to review the district court's final judgment pursuant to 28 U.S.C. § 1295(a)(1). The court of appeals filed its opinion on July 13, 2005. It denied Microsoft's timely petition for rehearing en banc on October 20, 2005. On January 12, 2006, Justice Stevens extended the time within which to file a petition for certiorari to and including February 17, 2006. No. 05A606. The jurisdiction of this Court is invoked under 28 U.S.C. § 1254(1).

STATUTORY PROVISION INVOLVED

Title 35 U.S.C. § 271(f)(1) provides:

§ 271. Infringement of patent

(f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

STATEMENT

In the twenty-two years since it was enacted, this Court has never interpreted 35 U.S.C. § 271(f). For much of that time, the statute was viewed almost as a dead letter—a loophole-closing provision that worked. *See* Alan M. Fisch & Brent H. Allen, *The Application of Domestic Patent Law to Exported Software: 35 U.S.C. § 271(f)*, 25 U. PA. J. INT'L ECON. L. 557, 567 & n.46 (2004) (noting that, on account of the "sparse caselaw," commentators have suggested that Section 271(f) "serves little purpose at all"). In recent years, however, the Federal Circuit has articulated new and far-reaching applications for Section 271(f), holding that the statute encompasses much more than simply the export of the unassembled, physical parts of a patented machine, as was the case in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), the decision that prompted the legislative loophole-closing effort. In this case, the Federal Circuit held that Section 271(f) applies to the distribution of intangible software code to foreign computer manufacturers, concluding that digital software code constitutes a "component" of a programmed-computer invention and that *copies* of that digital code created abroad by *foreign* computer manufacturers "may be deemed 'supplied' from the United States." App., *infra*, at 4a. And in its most recent application of Section 271(f), the Federal Circuit reached the conclusion that the statute could prohibit "suppl[ying]" a "component" of a patented *process*. *See Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 425 F.3d 1366 (Fed. Cir. 2005).

This case brings into focus a recurring judicial debate concerning whether patent laws—and in particular Section 271(f)—should be interpreted according to their plain meaning and legislative history, or whether—as the decision below holds—they "must . . . be interpreted in a manner that is appropriate to the technology at issue," so that the statutes might "remain effective." App., *infra*, at 10a. Although this Court has consistently resolved that debate in favor of the former position, *see Brown v. Duchesne*, 60 U.S. (19 How.)

183, 197 (1857), the Federal Circuit has determined to pursue a course that would take into account "advances in a field of technology . . . that developed after the enactment of" the statute. App., *infra*, at 10a. In so doing, the court of appeals disregarded fundamental canons of statutory construction, as well as this Court's repeated expressions of disfavor toward the extraterritorial application of U.S. law in the absence of a clear expression of contrary congressional intent. *See, e.g.*, *F. Hoffmann-LaRoche Ltd. v. Empagran S.A.*, 542 U.S. 155, 165 (2004). Because the "profound ramifications" (App., *infra*, at 22a) for innovating businesses multiply with each new lower-court effort to ensure that Section 271(f) remains "'responsive to the challenges of a changing world,'" (*id.* at 9a) this Court's interpretive guidance is now urgently needed.

1. ***The Nature of Software***

The decision below is premised on a commonly held misunderstanding of the nature, and thus the patentability, of software. In everyday usage, "software" is perceived as embodied in some kind of storage medium, such as a CD-ROM or a hard drive—as when one purchases a copy of Microsoft Word software on a CD-ROM. Similarly, "software" is often understood as operating on a computer and giving that computer certain functionality—as when a computer is loaded with Microsoft Excel software and used to create and manipulate a spreadsheet. Although prevalent, these uses of the word "software" are imprecise. By itself—that is, uncoupled from any storage medium or computer—software is nothing more than "a set of instructions, known as code, that directs a computer to perform specified functions or operations." *Fantasy Sports Props., Inc. v. Sportslines.com, Inc.*, 287 F.3d 1108, 1118 (Fed. Cir. 2002); *see also* 17 U.S.C. § 101 (defining a "computer program" as a "set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result"); UNITED STATES PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINATION PROCEDURE ("MPEP") § 2106.IV.B.1(a) (8th ed. 2001) ("a

computer program is merely a set of instructions capable of being executed by a computer").

Computer programmers develop software by first authoring "source code"—human-readable commands to the computer—in a computer language such as BASIC, FORTRAN, or C++. *See Gates Rubber Co. v. Bando Chem. Indus., Ltd.*, 9 F.3d 823, 835 (10th Cir. 1993). That source code is then run through a compiler that translates the human-readable source code into computer-readable "object code," which is expressed in the binary digital language of "0's" and "1's." Each digit instructs the computer to open or close one of the millions of switches in its central processing unit. It is the "opening and closing of the interconnected switches" that "creates electrical paths . . . that cause [the computer] to perform the desired function." *WMS Gaming Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1348 n.3 (Fed. Cir. 1999). The object code is thus nothing more than a complex set of digital commands that instruct a computer to align its circuits in a particular manner to achieve a particular functionality. In this sense, software code is not unlike the pattern of perforations in a player piano music roll, with each unique pattern of perforations generating, when run on a player piano (*i.e.*, hardware), a unique composition of music. Just as each perforation causes the piano to strike a particular string, each "1" or "0" of software code instructs a computer to close or open, respectively, a particular switch. *See generally White-Smith Music Publ'g Co. v. Apollo Co.*, 209 U.S. 1, 9-10 (1908) (describing the mechanics of a player piano). Like the perforations in a music roll, software code is design information that reflects specific knowledge about how to make hardware perform certain operations.

The distinction between software as integrated on a computer or other storage medium (such as a CD-ROM), and software as design information, is critical. When digital software code (like the pattern of perforations in a piano roll) is embodied on a physical medium (the actual piano roll) or alters the circuitry of a computer in a particularly useful way, that medium or computer, as physically and functionally al-

tered by the software, may be a patentable invention. *See In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc) (holding that a "general purpose computer programmed to carry out the claimed invention" was patentable as "a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software"); *see also* MPEP § 2106.IV.B.1(a); *cf. Alappat*, 33 F.3d at 1554 (Archer, C.J., concurring in part and dissenting in part) (recognizing that, under *Alappat*, a music roll with perforations embodying a new song could be patentable). In contrast, software code alone (the particular sequence of "1's" and "0's")—like the arrangement of holes to be punched into the music roll of a player piano—is neither a "process" nor a "machine, manufacture, or composition of matter." 35 U.S.C. § 101. Thus, although software code may be copyrightable, *see, e.g.*, *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1248 (3d Cir. 1983), it is not itself patentable.

Contrary to the Federal Circuit's conviction that, "[w]ithout question, software code alone qualifies as an invention eligible for patenting," App., *infra*, at 4a (quoting *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005)), the Patent and Trademark Office has explained that "a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality," is unpatentable because computer programs are neither "physical things" nor "acts being performed." MPEP § 2106.IV.B.1(a). Accordingly, the duplication of software code can itself never constitute an act of patent infringement. *See* 35 U.S.C. § 271(a) (limiting infringement actions to the manufacture, use, sale, or importation of a "patented invention"). At stake in this case is Microsoft's right to export digital software code—a sequence of "1's" and "0's"—to foreign companies that duplicate the code and install it on foreign-manufactured computers for sale in foreign markets.

2. *Microsoft's Distribution of Windows Software in Foreign Markets*

At its headquarters in Redmond, Washington, Microsoft designs, authors, and tests software, including the object code comprising the Windows operating system. App., *infra*, at 45a. Today, most computer systems sold to consumers come with the Windows object code "pre-installed" by the computer manufacturer onto the computer's hard drive. In addition to household American names such as Dell and Compaq, Microsoft does business with numerous computer manufacturers in foreign nations. These foreign manufacturers assemble their computer systems from physical parts—central processors, hard drives, keyboards, monitors, etc.—manufactured around the world, and the parties have stipulated that none of those physical parts is obtained from Microsoft. App., *infra*, at 47a. Once the computer system is fully assembled, the computer manufacturer "installs" Windows onto the computer's hard drive.

In foreign markets, as elsewhere, Microsoft distributes its Windows software to computer manufacturers by transmitting master copies of the Windows program, *i.e.*, a copy of the computer-readable, digital object code that instructs computers to perform the functions associated with the Windows operating system. Microsoft transmits the Windows object code to manufacturers either on a "golden master disk" or in an encrypted electronic transmission. App., *infra*, at 45a-46a. From that single master version, a manufacturer produces numerous duplicate copies. *Id.* Those copies—but "never" the master version of the object code transmitted by Microsoft—are then installed on foreign-manufactured computers. *Id.* at 45a. "Installation" is simply an act of duplication; a computer reads software code from the medium on which it is stored (usually, a disk or a host computer's hard drive) and scrivens the code onto the new computer's storage medium (typically, a hard drive). *See Stenograph L.L.C. v. Bossard Assocs., Inc.*, 144 F.3d 96, 100 (D.C. Cir. 1998) ("installation of software onto a computer results in 'copying'"). The digital software code actually "installed" on the

foreign-manufactured computers is thus a second-generation copy of the digital software code transmitted from the United States—a foreign-made copy of a foreign-made copy of the original. *See Union Carbide Chems. & Plastics Tech. Corp.*, 425 F.3d at 1379 (citing the decision below as concerning "exportation of a 'master' computer readable disc that was further copied abroad, with the copies installed as software on assembled computers").

3. *AT&T's Patent Infringement Action*

AT&T sued Microsoft in district court alleging that computers running the Windows operating system infringe AT&T's United States Reissue Patent 32,580 ("the '580 patent"), which claims a Digital Speech Coder system. App., *infra*, at 44a-45a. AT&T's patented system is comprised of a computer programmed with a "speech codec"—a program that is capable of compressing and decompressing digitally recorded speech—a microphone, and a speaker. *Id.* at 3a. The microphone is used to input speech that the speech-codec-equipped computer can digitize, compress, decompress, and reproduce through the speaker. AT&T does not hold a patent on the speech codec itself because, as described above, standing alone, software code is not patentable. AT&T thus alleged that computers programmed with Windows infringe its patent by enabling the user, through Windows' own speech codecs, to record, store, and play back speech in a manner substantially similar to that described in the '580 patent.

Microsoft stipulated that, by selling copies of its Windows software to manufacturers of computers that are ultimately manufactured, used, or sold in the United States, it induced those computer manufacturers to infringe the '580 patent. 35 U.S.C. § 271(b); *see also* App., *infra*, at 42a. AT&T further contended that, under 35 U.S.C. § 271(f)(1), it was also entitled to damages for every Windows-based computer manufactured *outside* the United States. AT&T argued that the Windows object code constitutes a "component" of AT&T's patented Digital Speech Coder system and that the

foreign-made copies of that object code installed on the foreign-manufactured computers were, in fact, "supplie[d]" by Microsoft "from the United States." App., *infra*, at 46a.

Microsoft moved for partial summary judgment on the Section 271(f) question, arguing that Microsoft's object code was intangible information and thus could not be considered a "component[] of a patented invention" because, among other reasons, information cannot be "combin[ed]" with other objects in the manner required by the statute. App., *infra*, at 24a. And even if object code could be a "component[] of a patented invention," Microsoft argued, under no circumstances had Microsoft "supplie[d]" the foreign-manufactured copies. Microsoft "supplie[d] . . . from the United States" only the golden master disks and encrypted transmissions embodying the master versions of the Windows object code (*id.* at 47a)—neither of which was ever "combin[ed]" in a foreign-manufactured computer.

The district court denied Microsoft's motion for partial summary judgment. App., *infra*, at 22a. Finding "no limitation of the term 'components,'" that would exclude "intangible information," the court held that object code could constitute a "component[] of a patented invention" within the meaning of Section 271(f). *Id.* at 31a (citing *Moore U.S.A. Inc. v. Standard Register Co.*, 144 F. Supp. 2d 188, 195 (W.D.N.Y. 2001) (holding blueprints of a patented envelope to be a "component" of that invention)). The district court reasoned that this broad interpretation was necessary to account for recent technological developments, explaining that "excluding protection for inventions using software would not be responsive to the challenges of a changing world." *Id.* at 32a (internal quotation marks omitted).

The district court further held that Microsoft had "supplie[d] . . . from the United States" each of the foreign-made copies of Windows "'even though they never touched U.S. soil.'" App., *infra*, at 35a (internal quotation marks omitted). The court reached the conclusion that each foreign-made copy is actually "originally manufactured in the United

States" because "replication of the object code abroad" is different in kind from the "manufactur[e] . . . of it . . . abroad." *Id.* at 35a. The district court therefore concluded that Microsoft was liable under Section 271(f) for each foreign-manufactured copy of the Windows object code installed on a foreign-assembled computer. *Id.* at 38a.

The parties thereafter stipulated to the entry of final judgment in favor of AT&T. App., *infra*, at 41a. The parties agreed that the '580 patent "is enforceable and not invalid" and that, under the district court's interpretation of Section 271(f), Microsoft was liable for Windows-programmed computers manufactured outside the United States. *Id.* at 42a. The stipulated judgment, however, expressly preserved Microsoft's right to challenge on appeal the district court's interpretation of Section 271(f) based on a set of stipulated facts. *Id.* at 43a.

4. *The Decision Below*

a. A divided panel of the Federal Circuit affirmed. App., *infra*, at 11a. In determining whether intangible object code can constitute a "component[] of a patented invention" capable of being "combin[ed]" with other components within the meaning of Section 271(f), the panel majority relied upon the Federal Circuit's holding in *Eolas Technologies*, 399 F.3d 1325, which was decided while Microsoft's appeal was pending. *Eolas* held that object code can be a "component[] of a patented invention" because, in the *Eolas* panel's view, Section 271(f) is not expressly limited "to 'machine' components or 'structural or physical' components. Rather every component of every form of invention deserves the protection of section 271(f)." *Id.* at 1339. The *AT&T* panel adopted the *Eolas* court's conclusion without expanding upon its analysis. App., *infra*, at 4a. Neither the panel below, nor the decision on which it relied, ever explained how intangible information—a sequence of "0's" and "1's"—can be "combin[ed]" with tangible objects to create a patented product.

The panel majority further concluded that Microsoft was liable under Section 271(f) for each foreign copy of the Windows object code traceable to the golden master disks and electronic transmissions shipped from the United States. App., *infra*, at 7a. The court held that each of these foreign-made copies had "essentially been supplied from the United States" because "[c]opying . . . is part and parcel of software distribution" and therefore, "for software 'components,' the act of copying is subsumed in the act of 'supplying.'" *Id.* at 6a, 7a; *see also id.* at 7a ("It is inherent in the nature of software that [it] . . . may be replicated."). In reaching this conclusion, the court candidly acknowledged that it was interpreting Section 271(f) to account for "the realities of software distribution" and to ensure that the statute "remain[s] effective" in a rapidly changing world. *Id.* at 7a, 10a. A conclusion that foreign-made copies were not supplied from the United States, the panel majority asserted, "would permit[] a technical avoidance of the statute by ignoring advances in a field of technology . . . that developed after the enactment of § 271(f)" and "would emasculate § 271(f) for software inventions." *Id.* at 6a n.2, 10a. The panel majority accorded no significance to the ready availability of foreign patents to protect AT&T from acts of foreign infringement, finding it more appropriate to "construe our statutes irrespective of the existence or nonexistence of foreign patents." *Id.* at 6a n.2.

b. Judge Rader dissented. Although Judge Rader agreed that the Federal Circuit's recent decision in *Eolas* was controlling as to the issue of whether software code could be a "component[] of a patented invention," he disagreed with the majority's conclusion that the foreign-manufactured copies of the Windows object code had been "supplie[d] . . . from the United States." App., *infra*, at 11a. Judge Rader rejected the panel majority's contention that the "act of copying is subsumed in the act of 'supplying,'" *id.* at 6a, finding such reasoning to be contrary to the "ordinary meaning of 'supplies.'" *Id.* at 12a. The necessary consequence of the panel majority's holding, Judge Rader recognized, was to "pro-

vide[] extraterritorial expansion to U.S. law by punishing under U.S. law 'copying that occurs abroad.'" *Id.* at 12a. The majority opinion was flawed, Judge Rader continued, because it "holds Microsoft liable for the activities of *foreign manufacturers making copies* of the patented component abroad" in the absence of a clear indication of Congress's intention to do so. *Id.* at 16a-17a. Judge Rader concluded that—rather than seeking to give extraterritorial effect to U.S. patent law—the proper course of action for AT&T would have been to "protect its *foreign* markets from *foreign* competitors by obtaining and enforcing *foreign* patents." *Id.* at 18a-19a (emphases added).

REASONS FOR GRANTING THE PETITION

This case presents a recurring question of vital importance to the U.S. software industry. The Federal Circuit's "recent[] exten[sion] of the meaning" of Section 271(f)(1) to include foreign-made copies of software code, *Union Carbide Chems. & Plastic Tech. Corp. v. Shell Oil Co.*, _ F.3d _, 2006 WL 47462, at *1 (Fed. Cir. Jan. 10, 2006) (Lourie, J., dissenting from denial of reh'g en banc), vastly expands the extraterritorial reach of U.S. patents involving software. As the Federal Circuit has enlarged the law, U.S. patents on programmed-computer inventions grant monopolies enforceable against American competitors not only as to computers manufactured or sold in the United States, but also as to computers made and sold abroad. This self-described extension of Section 271(f) eviscerated the well-established "right" of American software companies "to compete with an American patent holder in foreign markets," *Deepsouth Packing Co.*, 406 U.S. at 531, thereby exposing those businesses to potentially crippling liability—here, tripling Microsoft's infringement liability.[1] *See* App., *infra*, at 37a. If allowed to stand, the Federal Circuit's reformulation of Section

[1] Judge Lourie's description of the Federal Circuit's interpretation of Section 271(f) in *Eolas* and *AT&T* as a "recent[] exten[sion]" is particularly telling inasmuch as he authored the majority opinion in *AT&T*.

271(f) will undoubtedly compel American software companies to reevaluate decisions to locate their research-and-development facilities in the United States. And because the Federal Circuit's extension of the meaning of "component" cannot possibly be limited only to software, other American technology-based businesses that manufacture products overseas based on knowledge and designs conceived in the United States will find themselves at risk as well.

Nothing in the statutory text or legislative history of Section 271(f) even remotely suggests that it was intended to encompass foreign-made copies of software code or other design information. Responding to this Court's decision in *Deepsouth*, Congress enacted Section 271(f) in order to prevent American companies from circumventing the patent laws' proscription against "manufacture . . . of a patented invention" by shipping all the component parts of a patented product overseas for final assembly. Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 101, 98 Stat. 3383, 3383. But sending software code alone to foreign manufacturers is manifestly different in kind from the conduct that Congress addressed in the wake of *Deepsouth*. Software code is design information, and if design information could constitute a "component[] of a patented invention," then the export of blueprints, formulas, and methodologies—in other words, knowledge—would itself constitute an act of infringement, thereby giving U.S. patents global force and effect. The Federal Circuit's interpretation of the phrase "component[] of a patented invention" thus runs headlong into this Court's long-standing rule that the patent laws do not apply extraterritorially, *see Dowagiac Mfg. Co. v. Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915), and the more general canon of construction that U.S. laws must not be given extraterritorial effect in the absence of a clear expression of congressional intent to reach foreign conduct, *see, e.g., Sale v. Haitian Ctrs. Council, Inc.*, 509 U.S. 155, 176 (1993).

Even if software code could constitute a "component[] of a patented invention" within the meaning of Section

271(f), the Federal Circuit's additional quantum leap to the conclusion that *copies* of U.S.-designed software made entirely *outside* the United States are, despite their foreign provenance, "supplie[d] . . . from the United States," amplifies the need for this Court's review. Like its interpretation of "component," the Federal Circuit's textually indefensible interpretation of "supplie[d]" broadly expands the extraterritorial reach of the U.S. patent laws. Indeed, if the Federal Circuit is correct that—at least where software is concerned—"the [foreign] act of copying is subsumed in the [domestic] act of 'supplying'" (App., *infra*, at 6a), then the Federal Circuit has indeed categorically excluded software companies from the "right of American companies to compete with an American patent holder in foreign markets." *Deepsouth Packing Co.*, 406 U.S. at 531. The Federal Circuit's excursion into foreign markets at once trenches upon Congress's authority to regulate foreign commerce and greatly reduces (if not entirely eliminates) the incentive for inventors to obtain patents in jurisdictions other than the United States. It thus threatens to disrupt foreign nations' patent law schemes and creates the possibility of retaliatory action and substantial international discord.

This Court has not previously found occasion to interpret Section 271(f), and its review is now urgently needed to restore the territorial limits that Congress placed on the U.S. patent laws. This case, which comes to this Court on stipulated facts and is final in all respects, presents an ideal vehicle for that review.

I. THIS CASE PRESENTS A RECURRING QUESTION OF VITAL IMPORTANCE TO THE U.S. SOFTWARE INDUSTRY.

The Federal Circuit's decision has "profound ramifications for . . . software manufacturers." App., *infra*, at 22a. Indeed, by casting aside its earlier holding that Section 271(f) does not proscribe the exportation of design information, *see Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1117-18 (Fed. Cir. 2004), and extending Section 271(f) to encompass

foreign-made copies of such information, the Federal Circuit retroactively exposed American software companies—and other technology-based businesses—to potentially crippling infringement liability for foreign activities, and threatened their substantial investments in overseas manufacturing facilities built in reliance on the freedom to compete with patent holders in foreign markets that the patent laws and the decisions of this Court ordained. The gravity of the consequences attributable to the Federal Circuit's recent extension of Section 271(f) thus marks this case as one of exceptional importance, warranting this Court's review.

1. It is axiomatic that American patent laws generally are "not intended to[] operate beyond the limits of the United States." *Brown*, 60 U.S. (19 How.) at 195; *see also* 35 U.S.C. § 154(a)(1) ("Every patent shall . . . grant to the patentee . . . the right to exclude others from making . . . or selling the invention throughout *the United States*") (emphasis added). Accordingly, this Court has long recognized that U.S. patent laws afford no protection against efforts to practice a patented invention outside the territorial jurisdiction of the United States. *See Dowagiac Mfg. Co.*, 235 U.S. at 650 ("The right conferred by a patent under our law is confined to the United States and its Territories and infringement of this right cannot be predicated [on] acts wholly done in a foreign country.") (citation omitted); *see also Deepsouth Packing Co.*, 406 U.S. at 531 (acknowledging "the right of American companies to compete with an American patent holder in foreign markets"); *Rotec Indus., Inc. v. Mitsubishi Corp.*, 215 F.3d 1246, 1251 (Fed. Cir. 2000) ("extraterritorial activities . . . are irrelevant"). Section 271(f), enacted specifically in response to this Court's decision in *Deepsouth*, places an eminently sensible, but intentionally quite narrow, limitation on that right.

Deepsouth held that a company was not liable for infringement for "manufactur[ing] . . . a patented invention . . . in the United States" where it manufactured all the component parts of a patented shrimp deveining machine in the United States and shipped those parts for final assembly to

foreign customers. 406 U.S. at 524. Because the final assembly occurred in a foreign country, the Court concluded that the defendant did not "manufacture" the patented machine within the United States and therefore did not infringe the patent. *Id.* at 527. The Court emphasized the territorially limited nature of the United States patent laws, finding that Section 271(a) "makes it clear that it is not an infringement to make or use a patented product outside of the United States." *Id.* Recognizing that its decision might be viewed as opening a loophole in the patent laws, the *Deepsouth* Court invited Congress to provide a "clear . . . indication of intent to extend the patent privilege" to the export of components of a patented invention for assembly abroad. *Id.* at 532.

Congress responded by enacting Section 271(f) as part of the Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 101, 98 Stat. 3383, 3383. The text of the statute makes clear that it was directed toward the specific factual scenario at issue in *Deepsouth*—evasion of the proscription against "manufacture . . . of a patented invention" through the export of the patented product's *physical* parts for final assembly abroad. Section 271(f) prohibits the "suppl[y] . . . from the United States . . . [of] *components* of a patented invention . . . in such manner as to actively induce the *combination* of such components." 35 U.S.C. § 271(f)(1) (emphases added); *see also id.* § 271(f)(2) (referring to a "component" that is "uncombined in whole or in part").

Section 271(f) plainly was not intended to prohibit the export of intangible items. *See Union Carbide Chems. & Plastics Tech. Corp.*, _ F.3d at _, 2006 WL 47462, at *1 (Lourie, J., dissenting from denial of reh'g en banc) ("The whole tenor of [Section 271(f)] relates to *physical* inventions . . . .") (emphasis added). Absent congressional intent to the contrary, words in a statute must be given their ordinary meaning, *see Williams v. Taylor*, 529 U.S. 420, 431 (2000), and one does not ordinarily speak of a car's design specifications as being a "component" of the car. *See* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 466 (1976) (defining "component" as "a con-

stituent part" or "ingredient"). But even if the term "component"—taken alone—could conceivably be construed to include the essential intangible predicates to the invention, such as design specifications, the statutory context makes clear that the term is limited only to those "components of a patented invention" capable of being "combin[ed]," 35 U.S.C. § 271(f)(1), and intangible information cannot be "combined" with other physical parts to form a "patented invention," *i.e.*, a "process, machine, manufacture, or composition of matter," *id.* § 101. Rather, "combination" most commonly refers to the assembly of tangible parts into a whole. *See* WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY OF THE ENGLISH LANGUAGE 452 (defining "combine" as "to join in physical or chemical union"); *see also Rotec Indus.*, 215 F.3d at 1252 n.2 (Section 271(f) "precludes competitors from avoiding liability simply by supplying components of a patented product from the United States and assembling them abroad").[2]

That is certainly the sense in which Congress used the term. Congress explained that Section 271(f)

> prevent[s] copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the *assembly of the components* may be completed abroad. This proposal responds to the United States Supreme Court decision in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), concerning the need for a legislative solution to close a loophole in patent law.

Patent Law Amendments Act of 1984, 1984 U.S.C.C.A.N. 5827, 5828 (emphasis added); *see also* 130 Cong. Rec.

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[2] Returning to the player piano analogy, it is telling that this Court has recognized only the "perforated rolls"—never the arrangement of perforations—to be "component parts of the machine which executed the composition." *Goldstein v. California*, 412 U.S. 546, 565 (1973) (citing *White-Smith Music Publ'g Co.*, 209 U.S. at 18).

H12,231 (daily ed. Oct. 11, 1984) (statement of Rep. Kastenmeier) ("a product's patent cannot be avoided through the *manufacture* of *component parts* within the United States for *assembly* outside the United States") (emphases added). The legislative history's emphasis on the "assembly" of components and on the *Deepsouth* decision confirms that Congress was concerned with the specific facts of *Deepsouth* when enacting Section 271(f), not with the export of templates and design instructions used in foreign manufacturing.

This is further confirmed by the use of the term "component" in other parts of Section 271. The statute provides an exception from liability for the supply of a "component of a patented invention" that constitutes a "staple article or commodity of commerce." 35 U.S.C. § 271(f)(2); *see also id.* § 271(c). This Court, however, has never found anything other than a tangible product—an object of manufacture—to constitute a staple article of commerce. *See Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 490 n.41 (1984) ("The 'staple article of commerce' doctrine protects those who *manufacture products* incorporated into or used with patented inventions—for example, the paper and ink used with patented printing machines, or the dry ice used with patented refrigeration systems." (emphasis added; citations omitted)). Similarly, the Federal Circuit limited the term "component" as used in Section 271(g)—the companion provision to Section 271(f)—to refer only to "a physical product." *Bayer AG v. Housey Pharms., Inc.*, 340 F.3d 1367, 1372-73 (Fed. Cir. 2003).

2. For the twenty years that followed its enactment, the Federal Circuit interpreted Section 271(f) in a manner consistent with the statute's evident purpose and permitted application of the statute only to the exportation of physical parts of patented inventions. *See, e.g., Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991) (holding that Section 271(f) applies only in cases involving infringement of product patents and is not "implicated" in method patent cases). Indeed, as recently as 2004, the Federal Circuit specifically held that the statute did not prohibit

the export of design information to foreign manufacturers. *See Pellegrini*, 375 F.3d at 1117 (holding that Section 271(f) did not apply to circuit chips manufactured in a foreign country based upon instructions sent from the United States). At that time, the Federal Circuit explained that design instructions could not themselves be "components of a patented invention" because the phrase is limited to components that "are *physically present* in the United States and then either sold or exported" and "not simply to the supply of instructions or corporate oversight." *Id.* at 1117, 1118 (emphasis added).

Less than a year after *Pellegrini*, however, the Federal Circuit did an about-face, holding in *Eolas Technologies* that software object code could constitute a "component[] of a patented invention" within the meaning of Section 271(f). 399 F.3d at 1338-41. The *Eolas* panel reached this conclusion even though the Federal Circuit had previously recognized the fact that software object code is nothing more than a "set of instructions" expressed in the binary language of "1's" and "0's" that "directs a computer to perform specified functions." *Fantasy Sports Props., Inc.*, 287 F.3d at 1118. The *Eolas* panel reasoned that, inasmuch as software is a vital part of virtually all computer program inventions, software object code must be viewed as a component of such inventions. *See* 399 F.3d at 1339. The court distinguished its decision in *Pellegrini*, reasoning (unpersuasively) that the earlier decision's requirement that "components [be] physically supplied" did not mean that the components themselves had to be physical.

The *AT&T* panel majority compounded the *Eolas* court's error when it held that copies of Microsoft's object code manufactured in *foreign* countries had been "supplie[d] . . . from the United States." The Federal Circuit reached the improbable conclusion that, whenever a company exports digital software code, "[a]ll . . . resulting copies have essentially been supplied from the United States" because "the act of copying is subsumed in the act of supplying." App., *infra*, at 6a, 7a. The court's conclusion in this respect flew in the face

of the parties' stipulation that the "resulting copies" are never "physically present in the United States." *Id.* at 45a-46a.[3]

3. The Federal Circuit's textually insupportable extension of Section 271(f) effectively eliminates the right of American software companies to compete with patent holders in foreign markets. *See Deepsouth*, 406 U.S. at 530. When Congress enacted Section 271(f), it sought to end evasion of the patent law's proscription on manufacture of a patented invention in the United States, *see* 35 U.S.C. § 271(a), through the export of the patented product's physical component parts for assembly abroad. *See* 1984 U.S.C.C.A.N. at 5828. Congress, however, left completely intact the right to practice patented inventions outside of the United States. In foreign markets, a patentee's competitor remains free to duplicate or reverse-engineer inventions patented in the United States, or to assemble such inventions from foreign-manufactured component parts. If Microsoft wishes to make a Digital Speech Coder System in Japan, U.S. patent law supposedly poses no obstacle so long as the system's component parts are made abroad.

By holding that, for the software industry, "copying is subsumed in the act of supplying," the Federal Circuit has rendered it all but impossible for an American software firm to supply a software "component" from anywhere but the United States. *But see Dewsnup v. Timm*, 502 U.S. 410, 419 (1992) (judicial interpretation of a statute should not "effect a major change" in the applicable law "that is not the subject of at least some discussion in the legislative history"). Unlike businesses that may compete with a patent holder in a foreign market by manufacturing its American-designed components abroad, Microsoft and other American software companies

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[3] The panel majority's conclusion thus disregarded not only *Pellegrini* but also the Federal Circuit's decision in *Rotec*, 215 F.3d 1246, which held that a defendant had not "supplie[d]" "components" of a patented river dam construction device for purposes of Section 271(f) because the components were not manufactured in the United States. *Id.* at 1258.

may do so only if they actually *author* the software source and object codes outside the United States. Of course, at that point, they are no longer American businesses.

American software firms thus now face the daunting—and unforeseen—prospect of being saddled with massive infringement awards based upon the transmission of their U.S.-designed software code to foreign manufacturers who install replicated versions of the code on foreign-assembled computers for sale in foreign markets—conduct that until the Federal Circuit's sudden repudiation of *Pellegrini* was perfectly lawful. Indeed, in *Eolas*, the newly discovered theory of liability under Section 271(f) accounted for 64% of the jury's subsequently vacated $520 million infringement award. *See* Petition for a Writ of Certiorari at 4, *Eolas Techs.* (No. 05-288); *see also* Bruce A. Lehman et al., *Overseas Stretch*, LEGAL TIMES, July 11, 2005, at 525 (explaining why *Eolas* "goes too far").

This looming threat of crippling global liability places American software firms at a substantial disadvantage to their foreign competitors. American firms—should they trip over one of the thousands of unexploited patents comprising the modern "patent thicket"—are potentially liable for worldwide sales of the infringing product, while their foreign competitors are at risk only for the infringing products sold within the United States. The decision below thus effectively imposes a penalty (in the form of a massively enhanced litigation risk) on the location of software research-and-development facilities in the United States. Particularly for new software ventures, this operates as a powerful disincentive against locating in the United States. Indeed, the sudden onset of global infringement liability may drive some American software firms out of business altogether, thereby retarding technological progress and imperiling the United States' position as the global leader in high-technology innovation.

Moreover, because the Federal Circuit's expansive reinterpretation of the phrase "component[] of a patented invention" cannot in any principled fashion be cabined to software

object code, other businesses whose products derive their value principally from their design will be similarly threatened. As discussed above, software code is nothing more than design information that instructs a computer to arrange its circuits in a particular way. There are multitudes of other products whose designs are alone what makes the products new and useful, and, as the *Eolas* panel recognized, patent law must "accord[] the same treatment to all forms of invention." *Eolas Techs.*, 399 F.3d at 1339. Semiconductors, for example, are simply silicon wafers with a circuit design imprinted upon them—not unlike the design information at issue in *Pellegrini*. It is only the characteristics of that circuit design that make a semiconductor patentable. Semiconductor circuit designs are embodied in "masks," which are templates used to transfer the patterns onto blank silicon wafers. Under the Federal Circuit's reasoning, a semiconductor company that designs a "mask" in the United States and ships it to a foreign manufacturer for use as a template to produce finished semiconductors would be liable for patent infringement, even though no physical part of the circuit had been "supplie[d] ... from the United States." 35 U.S.C. § 271(f)(1).

Similarly, biotechnology companies patent cell lines. It is the particular arrangement of DNA that makes a cell line new or useful. According to the Federal Circuit, if an American company transmitted the genetic code of the cell line (or perhaps a single cell) overseas in order to facilitate the replication of the cell line, that company would have "supplie[d]" a "component" of the patented cell line even though the allegedly infringing cells were never physically present in the United States. Or outside the high technology sector, if one held a patent on an automobile tire on the basis of the characteristics of the tire's tread design and an American company shipped abroad a mold that embodied the tread design (which is to say, all of the traits that make the patented invention new and useful), under the Federal Circuit's view, that company, too, would be an infringer.

In this manner, the Federal Circuit's expansive interpretation of the phrase "component[] of a patented invention"—particularly when coupled with its counter-textual construction of "supplie[d]"—opens a limitless door of unintended consequences and eviscerates the ability of technology-based companies to compete with patent holders in foreign markets. The decision below thus jeopardizes the billions of dollars of investments that American high-technology businesses have made in overseas manufacturing facilities that the Federal Circuit now considers to be domestic infringement operations. These companies must now reevaluate their business models at potentially enormous cost. *See* Rosemarie Ham Ziedonis, *Patent Litigation in the U.S. Semiconductor Industry*, *in* PATENTS IN THE KNOWLEDGE-BASED ECONOMY 191 (Wesley M. Cohen & Stephen A. Merrill eds., 2003) (noting that a facility for producing computer chips can cost more than $1 billion to build and equip). It is for this and similar reasons that this Court recently emphasized that "courts must be cautious before adopting changes that disrupt the settled expectations of the inventing community." *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 739 (2002).

Because this case arises under the Federal Circuit's patent jurisdiction, its expansion of Section 271(f)'s scope has national application. The profound economic and technological consequences of this decision warrant this Court's review.

II. THE DECISION BELOW CONFLICTS WITH THIS COURT'S DECISIONS RESTRICTING THE EXTRATERRITORIAL APPLICATION OF U.S. LAW.

By eliminating the ability of American software companies—and other technology-based firms—to compete with American patent holders in foreign markets, the decision below exponentially expands the extraterritorial reach of U.S. patent law. Yet the presumption against the extraterritorial application of U.S. law is deeply rooted in this Court's juris-

prudence. Indeed, in *Empagran*, 542 U.S. 155, this Court recently emphasized that—in order to prevent U.S. encroachments on foreign sovereignty—courts must adopt *any* reasonable construction of a statute that *avoids* extraterritorial application. *Id.* at 174. Because Congress did not clearly express its intention for Section 271(f) to encompass intangible materials—let alone foreign-manufactured copies of intangible materials—the Federal Circuit's conclusion squarely conflicts with this Court's precedent restricting the extraterritorial reach of U.S. law.

1. It is a "longstanding principle of American law that legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States." *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) (internal quotation marks omitted). This presumption against extraterritoriality is grounded in comity considerations and "serves to protect against unintended clashes between our laws and those of other nations which could result in international discord." *Id.*; *see also Foley Bros. v. Filardo*, 336 U.S. 281, 286 (1949) (holding that a statute imposing an eight-hour work day did not apply to Americans employed overseas because "labor conditions . . . are the primary concern of [the] foreign country" in which the workers are employed).

The presumption against extraterritoriality also reflects the fact that the legislative and executive branches are much better equipped than the judiciary to evaluate the complex foreign policy considerations raised by the extraterritorial application of U.S. law. Indeed, decisions affecting international relations are "of a kind for which the Judiciary has neither aptitude, facilities nor responsibility." *Chi. & S. Air Lines, Inc. v. Waterman S.S. Corp.*, 333 U.S. 103, 111 (1948).

Because of these comity considerations and separation-of-powers concerns, courts must not construe a U.S. law as encompassing foreign conduct "unless . . . the affirmative intention of the Congress" to apply a law extraterritorially is

"clearly expressed" in the statutory language. *Arabian Am. Oil Co.*, 499 U.S. at 248 (internal quotation marks omitted); *see also Benz v. Compania Naviera Hidalgo, S. A.*, 353 U.S. 138, 147 (1957) (holding that the Labor Management Relations Act did not apply to a labor dispute involving a foreign ship operated by foreign seamen because Congress had not "clearly expressed" its "affirmative intention" to reach such conduct).

Even where Congress has unequivocally expressed its intention to give a U.S. law extraterritorial effect, the parameters of that authorization must be strictly construed in light of the general presumption against extraterritoriality. In *Empagran*, 542 U.S. 155, for example, this Court concluded that the Sherman Act—which generally has been held to apply to foreign conduct—did not provide a cause of action for plaintiffs harmed by foreign price-fixing activity that caused both domestic and independent foreign effects because the plaintiffs were harmed exclusively by the conspiracy's foreign effects. *Id.* at 173. The Court expressed concern that the availability of such a suit would "create[] a serious risk of interference with a foreign nation's ability independently to regulate its own commercial affairs." *Id.* at 165. The Court therefore held that, even if the more natural reading of the statute encompassed the foreign activity, comity considerations compelled a contrary conclusion because the statutory language did not "show that [the Court] *must* accept th[e] reading" that provided for an extraterritorial effect. *Id.* at 174. The Court instructed that, as long as "the statute's language reasonably permits an interpretation consistent with" the general presumption that Congress seeks to avoid interference with other nations' sovereignty, a court "should adopt it." *Id.*

2. The presumption against the extraterritorial application of U.S. law is especially strong in the patent context because the application of U.S. patent law to foreign commercial activity intrudes upon other nations' intellectual property schemes and thereby creates a significant risk of international discord. This Court has thus long recognized that U.S. patent

laws generally are "not intended to[] operate beyond the limits of the United States." *Brown*, 60 U.S. (19 How.) at 195; *see also Dowagiac Mfg. Co.*, 235 U.S. at 650.

Indeed, the proposition that U.S. patent law generally does not possess extraterritorial effect has been clear since at least the mid-nineteenth century, when this Court held in *Brown* that U.S. patent law did not extend to a French-built vessel that sailed into an American port. 60 U.S. (19 How.) at 198-99. The Court explained that applying U.S. patent law to foreign-manufactured goods would "embarrass the treaty-making power in its negotiations with foreign nations, and . . . interfere with the legislation of Congress when exercising its constitutional power to regulate commerce." *Id.* at 197.

The territorial limits on U.S. patent law not only reflect the comity and separation-of-powers concerns that animate the general presumption against extraterritoriality, but are also an expression of "this Nation's historical antipathy to monopoly and of repeated congressional efforts to preserve and foster competition." *Deepsouth*, 406 U.S. at 530 (footnote omitted). Patent law strikes a delicate balance between the objectives of promoting competition and rewarding innovation. Thus, although the issuance of a patent precludes competitors from making, using, or selling the patented invention *in the United States*, the patent does not undermine the "right of American companies to compete with an American patent holder in *foreign* markets." *Id.* at 531 (emphasis added). "To the degree that the inventor needs protection in markets other than those of this country," the inventor must "seek it abroad through patents secured in countries where his goods are being used." *Id.*[4]

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[4] Legal commentators have also recognized the dangers inherent in giving extraterritorial effect to U.S. patent law. *See, e.g.*, Curtis A. Bradley, *Territorial Intellectual Property Rights in an Age of Globalism*, 37 VA. J. INT'L L. 505, 584 (1997) (arguing that the territorial limits on U.S. patent law should be preserved because "the extraterritorial application of

3. The Federal Circuit's holding completely disregards this presumption against the extraterritorial application of U.S. law. Indeed, the Federal Circuit failed even to acknowledge the presumption or this Court's decisions applying it. In light of the plain meaning of the statutory language, the context in which the term "component" appears, and the legislative history, it plainly cannot be said that Section 271(f) constitutes the requisite "clear[] express[ion]" of Congress's intent to so increase the potency of United States patents as to proscribe foreign-made copies of software code and other product designs shipped from the United States. *Arabian Am. Oil Co.*, 499 U.S. at 248 (internal quotation marks omitted). Although Section 271(f) represents a clear expression of Congress's intent to extend U.S. patent law to proscribe the act of shipping physical components from the United States for assembly overseas, the foreign-made copies of the Windows object code were not, as a factual matter, shipped from the United States. And "[n]othing in § 271(f) or its enacting documents expresses an intent to attach liability to manufacturing activities occurring wholly abroad." App., *infra*, at 16a (Rader, J., dissenting). Moreover, even if the Federal Circuit's construction were the better reading of Section 271(f), the statutory language certainly does not foreclose the interpretation offered by Microsoft. The decision below thus would still contravene this Court's rule that courts "should adopt" any interpretation of a "statute's language [that] reasonably permits" the conclusion that Congress intended to avoid the extraterritorial application of U.S. law. *Empagran S. A.*, 542 U.S. at 174.[5]

[Footnote continued from previous page]

U.S. laws into other countries is arguably more parochial than global and more likely to undermine rather than promote international cooperation").

[5] The Federal Circuit's conclusion also conflicts with decisions in which other circuits have faithfully applied the presumption against extraterritoriality by refusing to give extraterritorial effect to statutes that lacked the requisite clear expression of congressional intent. *See, e.g.*,

In holding that Section 271(f) applies to foreign-manufactured copies of software, the Federal Circuit acknowledged that it was seeking to account for "advances in a field of technology . . . that developed *after* the enactment of § 271(f)." App., *infra*, at 10a; *see also id.* ("Section 271(f), if it is to remain effective, must therefore be interpreted in a manner that is appropriate to the nature of the technology at issue."). When the Federal Circuit took it upon itself to ensure that Section 271(f) "remain[s] effective," *id.*, it arrogated to itself a legislative role that properly rests with Congress and disregarded this Court's admonition that words must "be interpreted as taking their ordinary, contemporary, common meaning *at the time Congress enacted the statute.*" *BedRoc Ltd., LLC v. United States*, 541 U.S. 176, 184 (2004) (internal quotation marks omitted; emphasis added). Indeed, this Court has expressly rejected judicial efforts to rewrite the text of existing patent laws to cover technological advancements not foreseen by Congress, and has explained that

> [d]ifficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal. It is our duty to construe the patent statutes *as they now read*, in light of our prior precedents, and we must proceed cautiously when we are asked to extend

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[Footnote continued from previous page]

United States v. Javino, 960 F.2d 1137, 1143 (2d Cir. 1992) (holding that 26 U.S.C. § 5822, a provision of the National Firearms Act, does not apply to firearms made outside of the United States because "any statement by Congress contrary to th[e] presumption" against extraterritoriality was "absen[t]"); *Asplundh Tree Expert Co. v. NLRB*, 365 F.3d 168, 180 (3d Cir. 2004) (holding that the National Labor Relations Act does not apply to employees working temporarily outside the United States for United States employers because the court could "discover no clearly expressed congressional intention" to reach such extraterritorial activity).

> patent rights into areas wholly unforeseen by Congress.

Parker v. Flook, 437 U.S. 584, 595-96 (1978) (emphasis added; footnote omitted); *see also Brown*, 60 U.S. (19 How.) at 197 (patent laws "should not be strained by technical constructions to reach cases which Congress evidently could not have contemplated").[6]

4. The Federal Circuit's conclusion that Section 271(f) encompasses intangible materials and foreign-manufactured duplicates will disrupt foreign countries' intellectual property law systems by subjecting foreign manufacturers to the requirements of U.S. patent law. The possibility of such "interference with a foreign nation's ability independently to regulate its own commercial affairs" is one of the primary reasons that this Court has been extremely cautious about extending U.S. law to foreign conduct. *Empagran S.A.*, 542 U.S. at 165; *see also Hartford Fire Ins. Co. v. California*, 509 U.S. 764, 815 (1993) ("this and other courts have frequently recognized that, even where the presumption against extraterritoriality does not apply, statutes should not be interpreted to regulate foreign persons or conduct if that regulation would conflict with principles of international law"); *Murray v. Schooner Charming Betsy*, 6 U.S. (2 Cranch) 64, 118 (1804) ("an act of Congress ought never be construed to violate the law of nations if any other possible construction remains").

The Federal Circuit expressly declined to afford *any* weight to the existence of foreign patent law, asserting that it "must construe our statutes irrespective of the existence or nonexistence of foreign patents." App., *infra*, at 6a n.2. The court's lack of regard for other nations' intellectual property

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[6] *See also Diamond v. Chakrabarty*, 447 U.S. 303, 319 (1980) (Brennan, J., dissenting) ("[W]e must be careful to extend patent protection no further than Congress has provided. In particular, were there an absence of legislative direction, the courts should leave to Congress the decisions whether and how far to extend the patent privilege into areas where the common understanding has been that patents are not available.").

law systems will likely foster retaliatory measures by foreign countries, including efforts to extend their own patent laws within the United States' borders. Contrary to the Federal Circuit's expansive notion of its judicial role, it is Congress—not the courts—that bears responsibility for making decisions with such significant repercussions for foreign relations and international commerce. As this Court has explained, Congress "alone has the facilities necessary to make fairly such an important policy decision where the possibilities of international discord are so evident and retaliative action so certain." *Benz*, 353 U.S. at 147.

III. THIS CASE PRESENTS THE IDEAL VEHICLE FOR AUTHORITATIVELY CONSTRUING SECTION 271(F).

In October 2005, this Court declined to review the Federal Circuit's holding in *Eolas* that intangible software code can constitute a "component[] . . . of a patented invention" under Section 271(f). *Microsoft Corp. v. Eolas Techs. Inc.*, 126 S. Ct. 568 (2005). *Eolas*, however, was in an interlocutory posture when the petition was filed because the Federal Circuit had vacated those portions of the district court's decision that rejected Microsoft's anticipation, inequitable conduct, and prior art defenses, and had remanded for further proceedings on those issues. 399 F.3d at 1341. Because the *Eolas* petition for certiorari thus did not arise from a final judgment on the merits, it was arguably ill-suited to addressing the question of Section 271(f)'s scope. *See Estelle v. Gamble*, 429 U.S. 97, 114 (1976) (Stevens, J., dissenting) (referring to the Court's "normal practice of denying interlocutory review"). Indeed, the opposition brief repeatedly emphasized the interlocutory nature of the case. *See* Brief in Opposition at 4, *Eolas* (No. 05-288) ("The case is . . . in a classically interlocutory posture, counseling denial of review for that reason alone.").

Unlike *Eolas*, this cases arises from a final judgment on the merits that the district court entered against Microsoft, and it therefore suffers from none of *Eolas*'s procedural

shortcomings. After the district court denied Microsoft's motion for partial summary judgment, the parties entered a stipulated judgment that held Microsoft liable for both domestic and foreign acts of infringement. App., *infra*, at 42a. The only question preserved for appeal is whether Microsoft is liable under Section 271(f) for Windows-based computers manufactured and sold outside the United States. Moreover, the parties have agreed to stipulated facts governing the Section 271(f) issue, *id.* at 44a, and there are no disputes about claim construction or patent enforceability. *Id.* at 42a (stipulating that the '580 patent "is enforceable and not invalid"). Because the legal issues are therefore clearly distilled, this case is the ideal vehicle for this Court to declare an authoritative construction of Section 271(f).

CONCLUSION

For the foregoing reasons, the petition for a writ of certiorari should be granted.

Respectfully submitted.

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February 17, 2006

APPENDIX

APPENDIX A

United States Court of Appeals,
Federal Circuit.

AT & T CORP.,
Plaintiff-Appellee,

v.

MICROSOFT CORPORATION,
Defendant-Appellant.

No. 04-1285

July 13, 2005

Stephen C. Neal, Cooley Godward LLP, of Palo Alto, California, argued for plaintiff-appellee. With him on the brief were Jonathan G. Graves and Nathan K. Cummings, of Reston, Virginia. Of counsel on the brief was Laura A. Kaster, AT & T Corp., of Bedminster, New Jersey.

Dale M. Heist, Woodcock Washburn LLP, of Philadelphia, Pennsylvania, argued for defendant-appellant. With him on the brief were David R. Bailey and Lynn B. Morreale. Of counsel on the brief were James H. Carter and James T. Williams, Sullivan & Cromwell LLP, of New York, New York, and Thomas Andrew Culbert, Microsoft Corporation, of Redmond, Washington.

John D. Vandenberg, Klarquist Sparkman, LLP, of Portland, Oregon, for amici curiae Wacom Technology Corporation, et al.

Frank E. Scherkenbach, Fish & Richardson P.C., of Boston, Massachusetts, for amici curiae Adobe Systems, Inc., et al. With him on the brief was Kurt L. Glitzenstein. Of counsel on the brief was Jennifer K. Bush, of San Diego, California.

Before MAYER, LOURIE, and RADER, Circuit Judges.

Opinion for the court filed by Circuit Judge LOURIE. Dissenting opinion filed by Circuit Judge RADER.

LOURIE, Circuit Judge.

Microsoft Corporation ("Microsoft") appeals from the judgment of the United States District Court for the Southern District of New York in favor of AT & T Corp. ("AT & T"), holding that Microsoft was liable for infringement of AT & T's United States Reissue Patent 32,580 under 35 U.S.C. § 271(f) for copies of the Windows® operating system that had been replicated abroad from a master version sent from the United States. *AT & T Corp. v. Microsoft Corp.*, No. 01-CV-4872 (S.D.N.Y. Mar. 5, 2004). We affirm.

BACKGROUND

To facilitate international distribution of its flagship product, Microsoft supplies a limited number of master versions of the Windows® software to foreign computer manufacturers and authorized foreign "replicators," who, pursuant to their licensing agreements with Microsoft, replicate the master versions in generating multiple copies of Windows® for installation on foreign-assembled computers that are then sold to foreign customers. The master versions are created in the United States and are sent abroad on so-called "golden master" disks or via electronic transmissions.

The master versions of Windows® thus exported incorporate certain speech codecs,[1] which, when installed on a computer, are alleged to infringe AT & T's '580 patent. During the course of AT & T's suit against Microsoft for patent infringement, Microsoft moved *in limine* to exclude evidence of purported liability under 35 U.S.C. § 271(f) arising from foreign sales of Windows®. In support of its motion, Microsoft argued that: (1) software is intangible information such that it could not be a "component" of a patented invention within the meaning of § 271(f); and (2) even if the Windows® software were a "component," no actual "components" had been "supplied" from the United States as required by § 271(f) because the copies of Windows® installed on the foreign-assembled computers had all been made abroad.

By stipulation, the parties subsequently converted Microsoft's motion *in limine* into a motion for partial summary judgment of noninfringement under § 271(f), which the district court denied on the basis that neither the jurisprudence surrounding § 271(f) nor its legislative history supported Microsoft's reading of the words "component" and "supplied." Reasoning that the patentability of software was well-established and that the statute did not limit "components" to tangible structures, the district court rejected Microsoft's argument that software could not be a "component" of a patented invention under § 271(f). As for copies made abroad from a master version sent from the United States, the district court ruled that such copies were not shielded from § 271(f) in light of the statute's purpose of prohibiting the circumvention of infringement through exportation. The parties there-

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[1] A "speech codec" is a software program that codes a speech signal into a more compact form, and decodes it back into a signal that sounds like the original. (Am. Compl. ¶ 14; J.A. 142).

after agreed to the entry of a stipulated final judgment holding Microsoft liable for infringement under § 271(f), while expressly reserving Microsoft's right to appeal that issue.

This appeal followed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

DISCUSSION

On appeal, Microsoft argues that the district court erred in its determination of infringement under § 271(f), insisting that the master versions of the Windows® software that it exports for copying abroad are not "components" within the meaning of § 271(f). It also argues that liability under § 271(f) should not attach to the copies of Windows® made abroad because those copies are not "supplied" from the United States.

The first question, *i.e.*, whether software may be a "component" of a patented invention under § 271(f), was answered in the affirmative in *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), which issued while the instant appeal was pending. In that case, we held that "[w]ithout question, software code alone qualifies as an invention eligible for patenting," and that the "statutory language did not limit section 271(f) to patented 'machines' or patented 'physical structures,'" such that software could very well be a "component" of a patented invention for the purposes of § 271(f). *Id.* at 1339.

The remaining question, then, is whether software replicated abroad from a master version exported from the United States—with the intent that it be replicated—may be deemed "supplied" from the United States for the purposes of § 271(f). That question is one of first impression, the answer to which turns on statutory interpretation, an issue of law that we review *de novo*. *Romero v. United States*, 38 F.3d 1204, 1207 (Fed. Cir. 1994). The statute at issue, 35 U.S.C. § 271(f), provides that:

> (1) Whoever without authority *supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention*, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
>
> (2) Whoever without authority *supplies or causes to be supplied in or from the United States any component of a patented invention* that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f) (2000) (emphases added).

In its briefs, Microsoft maintains that no liability attaches under § 271(f) for foreign-replicated copies of Windows® because they are not "supplie[d] or cause[d] to be supplied in or from the United States." According to Microsoft, a foreign-replicated copy made from a master version supplied from the United States has actually been "manufactured" abroad by encoding a storage medium with the Windows® software. We disagree that no liability attaches.

When interpreting a statutory provision "[w]e start, as always, with the language of the statute," giving the words "their ordinary, contemporary, common meaning, absent an indication Congress intended them to bear some different import." *Williams v. Taylor*, 529 U.S. 420, 431, 120 S.Ct. 1479, 146 L.Ed.2d 435 (2000) (internal quotation marks and citations omitted). As the statute sets forth no specific definition of the word "supplied," we accordingly look to its "ordinary, contemporary, common meaning," which is necessarily context-dependent. In the present case, § 271(f) is being invoked in the context of software distribution. Therefore, in order for us to properly construe the "supplie[d] or cause[d] to be supplied in or from the United States" requirement, we must look at the way software is typically "supplied."

Given the nature of the technology, the "supplying" of software commonly involves generating a copy. For example, when a user downloads software from a server on the Internet, the server "supplies" the software to the user's computer by transmitting an exact copy. Uploading a single copy to the server is sufficient to allow any number of exact copies to be downloaded, and hence "supplied." Copying, therefore, is part and parcel of software distribution. Accordingly, for software "components," the act of copying is subsumed in the act of "supplying," such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies.[2]

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[2] The dissent grounds its disagreement on a purported distinction between the statutory term "supplies" and such terms as "copying," "replicating," or "reproducing." Whatever the distinction in other contexts, we are interpreting a statutory term in the context of the facts before us. To decide otherwise would emasculate § 271(f) for software inventions. Obtaining foreign patents would surely alleviate some avoidance of American law, but we

[Footnote continued on next page]

Indeed, Microsoft has taken full advantage of the replicable nature of software to efficiently distribute Windows® internationally. At the same time, however, Microsoft posits that § 271(f) liability should attach only to each disk that is shipped and incorporated into a foreign-assembled computer. *See* Tr. of Dec. 12, 2003 Hearing, at 16:10-17 (J.A. 359). We reject this theory of liability as it fails to account for the realities of software distribution. "[T]he appellate process is not a mere academic exercise," *Rosemount, Inc. v. Beckman Instruments, Inc.*, 727 F.2d 1540, 1543 (Fed. Cir. 1984), and we cannot disregard the nature of the relevant technology and business practices underlying a particular litigation. It is inherent in the nature of software that one can supply only a single disk that may be replicated—saving material, shipping, and storage costs—instead of supplying a separate disk for each copy of the software to be sold abroad. All of such resulting copies have essentially been supplied from the United States. Where there are competing interpretations of a statute that imposes liability for certain acts, an interpretation that allows liability to attach only when a party acts in an unrealistic manner is unlikely to be correct. *See Haggar Co. v. Helvering*, 308 U.S. 389, 394, 60 S.Ct. 337, 84 L.Ed. 340 (1940) ("A literal reading of [a statute] which would lead to absurd results is to be avoided . . . ."). We therefore reject Microsoft's reading of § 271(f).

We also reject Microsoft's argument that *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004), compels reversal. *Pellegrini* held that liability under § 271(f) may exist only where a component itself—as opposed to instructions for manufacturing the component or management

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must construe our statutes irrespective of the existence or nonexistence of foreign patents.

oversight—has been "supplie[d] or cause[d] to be supplied in or from the United States." *Pellegrini*, 375 F.3d at 1118. In the present case, what is being supplied abroad is an actual component, *i.e.*, the Windows® operating system, that is ready for installation on a computer to form an infringing apparatus—not instructions to foreign software engineers for designing and coding Windows®. Thus, *Pellegrini* does not control this case.

Additionally, we cannot accept Microsoft's suggestion that software sent by electronic transmission must be treated differently for purposes of § 271(f) liability from software shipped on disks, *see* Tr. of Dec. 12, 2003 Hearing, at 8:8-17 (J.A. 351), as it would amount to an exaltation of form over substance. Liability under § 271(f) does not depend on the medium used for exportation: a disk is merely a container that facilitates physical handling of software, much like bottles for liquids or pressurized cylinders for gases. As we emphasized in *Eolas*, the applicability of § 271(f) is not limited to "structural or physical" components. *Eolas*, 399 F.3d at 1339 ("[E]very component of every form of invention deserves the protection of section 271(f)."). Therefore, whether software is sent abroad via electronic transmission or shipped abroad on a "golden master" disk is a distinction without a difference for the purposes of § 271(f) liability. Liability under § 271(f) is not premised on the mode of exportation, but rather the fact of exportation.

Our interpretation of "supplie[d] or cause[d] to be supplied in or from the United States" in the context of software comports with Congress's motivation for enacting § 271(f). It is a well-established principle that "[i]n expounding a statute, we must . . . look to the provisions of the whole law, and to its object and policy." *United States v. Heirs of Boisdore*, 49 U.S. (8 How.) 113, 122, 12 L.Ed. 1009 (1850).

In 1984, Congress enacted § 271(f) in response to the Supreme Court's ruling in *Deepsouth Packing Co. v. Laitram*

Corp., 406 U.S. 518, 92 S.Ct. 1700, 32 L.Ed.2d 273 (1972), that exposed a loophole in § 271 that allowed potential infringers to avoid liability by manufacturing the components of patented products in the United States and then shipping them abroad for assembly. As explained in the Congressional Record:

> [Section 271(f)] will prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to the United States Supreme Court decision in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 92 S.Ct. 1700, 32 L.Ed.2d 273 (1972), concerning the need for a legislative solution to close a loophole in patent law.

H.R. 6286, Patent Law Amendments Act of 1984, 130 Cong. Rec. 28069 (Oct. 1, 1984). At the time of its enactment, § 271(f) was touted as a "housekeeping-oriented" measure, without which "the patent system would not be responsive to the challenges of a changing world and the public would not benefit from the release of creative genius." *Id.* However, it is clear from the legislative history that § 271(f), which "close[d] a loophole," was remedial in nature, such that it "should be construed broadly to effectuate its purposes." *Tcherepnin v. Knight*, 389 U.S. 332, 336, 88 S.Ct. 548, 19 L.Ed.2d 564 (1967). Congress obviously intended the statute to have an extraterritorial effect to the extent that the exportation was facilitated by acts in the United States, and the acts at issue here originating from the United States can be understood to be similarly within the meaning of the statute.

Were we to hold that Microsoft's supply by exportation of the master versions of the Windows® software—specifically for the purpose of foreign replication—avoids infringement, we would be subverting the remedial nature of

§ 271(f), permitting a technical avoidance of the statute by ignoring the advances in a field of technology—and its associated industry practices—that developed after the enactment of § 271(f). It would be unsound to construe a statutory provision that was originally enacted to encourage advances in technology by closing a loophole, in a manner that allows the very advances in technology thus encouraged to subvert that intent. Section 271(f), if it is to remain effective, must therefore be interpreted in a manner that is appropriate to the nature of the technology at issue.

For this reason, we find Microsoft's lock-and-key hypothetical, in which a single master key is sent abroad for mass replication, to be unpersuasive and irrelevant to this case. A lock-and-key assembly is a different type of technology from software, with different uses, such that its mode of mass production and consequent manner of supply abroad could very well be different from the way Microsoft conveniently hypothesizes it to be. While it is clear that a software manufacturer would want several million exact copies of a specific software program generated abroad for distribution, it is unclear why a lock-and-key manufacturer would want several million exact copies of a specific key made, as the point of having a lock-and-key assembly is to allow access control by a few keys. We prefer an interpretation of § 271(f) that is informed by actual industry practices, not by hypothetical scenarios that have no bearing on the technical realities of the invention at issue.

Finally, Microsoft's impassioned recitation of a parade of horribles that may befall the domestic software industry-such as the relocation of manufacturing facilities overseas-provides an insufficient basis for reaching a different result in this case. After all, the enactment of § 271(f) could have been similarly thought to result in the export of jobs, and Congress still enacted that provision. Moreover, possible loss of jobs in this country is not justification for misinter-

preting a statute to permit patent infringement. More importantly, however, "[i]t is enough that Congress intended that the language it enacted would be applied as we have applied it." *Griffin v. Oceanic Contractors, Inc.*, 458 U.S. 564, 576, 102 S.Ct. 3245, 73 L.Ed.2d 973 (1982). Therefore, "[t]he remedy for any dissatisfaction with the results in particular cases lies with Congress" and not with this court. *Id.*

We have considered Microsoft's other arguments and conclude that they are either unpersuasive or unnecessary for resolution of this appeal.

CONCLUSION

For the foregoing reasons, the judgment of the district court holding Microsoft liable under § 271(f) is

AFFIRMED.

RADER, Circuit Judge, dissenting.

This court today determines that supplying a single "component" of a patented invention from the United States gives rise to endless liability in the United States under § 271(f) for products manufactured entirely abroad. To my eyes, this judgment disregards the existing international scheme of patent law with potential consequences beyond a "parade of horribles [in] the domestic software industry." Therefore, although agreeing that software may be a component of a patented invention under § 271(f) and that electronic transmissions of software from the United States must receive the same treatment as software shipped from the United States on disks, I respectfully dissent from the proposition that foreign manufacture of a mere component of a patented product creates liability in the United States under § 271(f).

As noted by this court, section 271(f) imposes liability on anyone who "without authority supplies . . . from the United States . . . the components of a patented invention . . .

in such a manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent . . . ." Today's judgment turns on the meaning of "supplies." This court purports to construe that term according to its "ordinary, contemporary, common meaning." The ordinary meaning of "supplies," however, does not include "copying," "replicating," or "reproducing"—in effect "manufacturing." The act of supplying is separate and distinct from copying, reproducing, or manufacturing. Thus, this court provides extraterritorial expansion to U.S. law by punishing under U.S. law "copying" that occurs abroad. While copying in Düsseldorf or Tokyo may indeed constitute infringement, that infringement must find its remedy under German or Japanese law.

Each manufacture of a patented product constitutes a separate and distinct act of infringement. Microsoft "supplied" a master disc to New York, Düsseldorf, and Tokyo. The district court properly assessed damages against Microsoft under § 271(a) for each copy of the master manufactured and implemented into an infringing product in New York.[1] Similarly, section 271(f) attaches liability to each individual export from the United States of components of an incomplete invention for assembly abroad. As for manufacturing copies in Düsseldorf and Tokyo for the German and Japanese markets, those acts create liability only under German or Japanese law. Nonetheless, this court extends § 271(f) to cover extraterritorial copying in Düsseldorf and Tokyo. This extraterritorial expansion of U.S. patent law contravenes the

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[1] Microsoft might also be liable for supplying the master to Düsseldorf and Tokyo if copies made in those overseas locations are sold back into the U.S. market. *See* 35 U.S.C. § 271(a) & (c) (prohibiting importing into the United States patented inventions or components thereof).

precedent of this court and the Supreme Court that expressly confines the rights conferred by Title 35 to the United States and its Territories. *See Dowagiac Mfg. Co. v. Minn. Moline Plow Co.*, 235 U.S. 641, 650, 35 S.Ct. 221, 59 L.Ed. 398 (1915) ("The right conferred by a patent under our law is confined to the United States and its Territories (Rev.Stat., § 4884) and infringement of this right cannot be predicated on acts wholly done in a foreign country." (citing *United Dictionary Co. v. G & C Merriam Co.*, 208 U.S. 260, 265, 28 S.Ct. 290, 52 L.Ed. 478 (1908))); *accord Int'l Rectifier Corp. v. Samsung Elecs. Co.*, 361 F.3d 1355, 1360 (Fed. Cir. 2004); *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1117 (Fed. Cir. 2004); *Rotec Indus., Inc. v. Mitsubishi Corp.*, 215 F.3d 1246, 1251 (Fed. Cir. 2000); *see Waymark Corp. v. Porta Sys. Corp.*, 245 F.3d 1364, 1367-68 (Fed. Cir. 2001) (holding that liability under § 271(f) attaches with mere shipment of the component from the United States and does not consider the presence or absence of acts occurring abroad).

Again this extraterritorial expansion flows from this court's broad construction of "supplies." This court reasons that the "nature of the technology" justifies a different, unordinary, and uncommon construction of that term. Thus, this court distinguishes intangible software components from tangible components on the grounds that "the 'supplying' of software commonly involves generating a copy."

To the contrary, copying and supplying are separate acts with different consequences—particularly when the "supplying" occurs in the United States and the copying occurs in Düsseldorf or Tokyo. As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software. Thus, copying and supplying are different acts, and one act of "supplying" cannot give rise to liability for multiple acts of copying.

The court's proposition today that "the 'supplying' of software commonly involves generating a copy" does not actually distinguish software components from physical components of other patented inventions. The only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport. The ease of copying a patented component is not the proper basis for making distinctions under § 271(f).

Possibly recognizing defects in its reasoning, this court limits its novel uncommon construction of "supplies" to "*software 'components*,' [because for those inventions] the act of copying is subsumed in the act of 'supplying,' . . . ." Rather than "according the same treatment to all forms of invention," *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (2005) (citing TRIPS Agreement, Part II, Section 5 (1994) ("Patents shall be available and patent rights enjoyable *without discrimination* as to the place of invention[ ][and] *the field of technology* . . . .") (emphases added)), this court creates a new rule that foreign copying of a component of a patented invention shipped from the U.S. gives rise to liability in the U.S. Apparently this rule applies only to software inventions. This application of "supplies" solely to software components ignores this court's case law that refuses to discriminate based on the field of technology. *Id.* The language of § 271(f) does not discriminate based on field or form of technology, yet this court invents such a distinction.

This court also declines to treat software the same as other inventions because a literal application of § 271(f) "fails to account for the realities of software distribution . . . and [this court] cannot disregard the nature of the relevant technology and business practices underlying a particular litigation." However, in *Pellegrini* an American corporation provided the instructions and corporate oversight that

"cause[d] the components of the patented invention to be supplied," but no part of the accused products ever entered or exited the United States. 375 F.3d at 1118. Thus, the production of the infringing products in Pellegrini was "*facilitated by acts in the United States*." Despite economic harm to the plaintiff and economic benefit to the defendant both in the United States, this court strictly construed § 271(f) to "appl[y] only where components of a patent[ed] invention are physically present in the United States and then either sold or exported . . . ." *Id.* at 1117. This court should exercise the same restraint demonstrated in *Pellegrini* by refusing to broaden § 271(f) to accommodate the "nature of the relevant technology and business practices underlying a particular litigation."

In fact, the "realities of software distribution" or "nature of the relevant technology and business practices" theory amounts to the following: "section 271(f) liability attaches if this court perceives that the patented component is cheaper or more convenient to replicate abroad than to ship from the United States." In sum, this "nature of the business" theory has no statutory support and may well not even be based on an accurate understanding of the nature of the software business.

Furthermore, this court's dismissal of *Pellegrini* because Microsoft supplied an actual component of the patented invention and not merely instructions as in *Pellegrini* does not reconcile the holding of *Pellegrini* with today's ruling. *Pellegrini* holds that "the language of § 271(f) clearly contemplates that there must be an intervening sale or exportation; there can be no liability under § 271(f) unless components are shipped from the United States for assembly." 375 F.3d at 1117. In the case before this court Düsseldorf and Tokyo distributors copy the components supplied from the United States and then install those copies into the infringing products. The German and Japanese manufacturers do not

install the actual component "supplied" from the U.S. (the master disc). Instead, they install a copy made in Düsseldorf or Tokyo. Thus, under *Pellegrini* liability cannot attach under § 271(f) because the components actually assembled into the infringing products were never literally "shipped from the United States." To my eyes, today's ruling departs from the holding of *Pellegrini*.

The majority also purports to construe § 271(f) to "comport with Congress'[s] motivation for enacting § 271(f)." Apart from the impossibility of divining Congressional intent divorced from the language of the law, this court's reasoning misses the policy behind § 271(f). Congress enacted § 271(f) in response to the Supreme Court's holding in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 92 S.Ct. 1700, 32 L.Ed.2d 273 (1972). *Deepsouth* held that making and shipping component parts of a patented combination invention did not constitute "making" the patented invention in the United States. *Id.* at 527-29, 92 S.Ct. 1700 ("We cannot endorse the view that the 'substantial manufacture of the constituent parts of a machine' constitutes direct infringement when we have so often held that a combination patent protects only against the operable assembly of the whole and not the manufacture of its parts."). Thus, because Deepsouth was not "making" the invention in the United States before exportation, there was no direct infringer in the United States to enable a charge of contributory infringement. *Id.* at 527, 92 S.Ct. 1700. *Deepsouth* let U.S. manufacturers escape infringement by making and exporting less than the complete patented invention. Section 271(f) closed that loophole by attaching liability to U.S. manufacturers for making and exporting components of the patented invention.

Nothing in § 271(f) or its enacting documents expresses an intent to attach liability to manufacturing activities occurring wholly abroad. This court's ruling, however, does exactly that: It holds Microsoft liable for the activities of *for-*

eign manufacturers making copies of the patented component abroad.

To the contrary, § 271(f) protects only components "supplied in or from the United States." This language limited § 271(f) to ensure it would not embrace manufacturing or copying activities occurring abroad. The "supplied in and from the United States" limitation would be wholly unnecessary, and indeed would contradict the intent of the law, if the law intended, as this court holds today, to regulate activities occurring in Düsseldorf or Tokyo. Had Congress intended to give extraterritorial effect to U.S. patent laws, it would have expressly stated so. Instead, Title 35 expressly limits liability under § 271(f) to activities occurring in the United States that result in the literal shipment of components "in or from the United States."

As a final refusal to confront the central issues of this case, the court today dismisses Microsoft's lock-and-key hypothetical as "irrelevant," as merely a scenario "without bearing on the technical realities." To the contrary, just as computers easily can make copies of software components of patented computer products, key replication machines easily can make copies of the key component of a patented lock product. A computer needs a master copy to replicate the software; similarly, a key replication machine needs a master copy to replicate the key. Thus, under a fair presentation of the hypothetical, a U.S. manufacturer supplies a single master key of a patented lock invention from the United States. Foreign manufacturers then copy that key for foreign sale as part of the patented lock product.[2] I doubt that the U.S.

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[2] The court's dismissal of the "key" hypothetical is easily addressed by adjusting the facts of the hypothetical. Consider a lock-and-key combination that recognizes the voice of the key's rightful owner. Only after confirming the identity of the owner does the

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manufacturer who supplied the single master key would be liable under § 271(f) for the multiple infringing lock products manufactured and sold abroad. Yet this court creates liability under indistinguishable circumstances.

Other possible scenarios further highlight difficulties with this court's holding. For example, this court's holding would seem to impose liability under § 271(f) for foreign-manufactured copies on an individual who purchased a copy of AT & T's patented software and then shipped it overseas knowing that it would be copied and sold in Düsseldorf or Tokyo. The same problem might arise if the individual ships the purchased software to Düsseldorf with no intention of making further copies, but the Düsseldorf distributor of its own accord then makes and sells foreign copies. Before this opinion, the law would have suggested that AT & T would need to resort to German law and courts to determine any infringement for the copies manufactured and sold in Düsseldorf, but apparently this court purports to change that basic tenet of patent law.

This court reinforces one point several times, namely that its judgment reaches a just result by imposing liability for multiple infringing acts by foreign manufacturers on a U.S. "supplier" of a single patented component. This emphasis suggests that AT & T might otherwise have no remedy for infringement occurring wholly outside the United States. AT & T, however, is not left without remedy. AT & T can protect its foreign markets from foreign competitors by ob-

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lock expose the opening for the key and the key expose the teeth necessary to rotate the locking mechanism. Thus, each lock and key may have the same shape, thereby decreasing manufacturing costs, and yet allow access to a limited number of persons.

taining and enforcing foreign patents. Section 271(f) protects foreign markets from domestic competitors. Section 271(f) does not, or at least did not until today, protect foreign markets from foreign competitors. This court's expansion of § 271(f) to offer protection to foreign markets from foreign competitors distorts both the language and the policy of the statute. This court should accord proper respect to the clear language of the statute and to foreign patent regimes by limiting the application of § 271(f) to components literally "shipped from the United States." *Pellegrini*, 375 F.3d at 1117.

For the foregoing reasons, I must respectfully dissent.

APPENDIX B

United States District Court,
Southern District of New York.

AT & T CORP., Plaintiff,

v.

MICROSOFT CORPORATION, Defendant.

No. 01 Civ 4872(WHP).

March 5, 2004.

Jonathan G. Graves, Frank V. Pietrantonio, Brian M. Koide, Cooley Godward, LLP, Reston, VA, for Plaintiff.

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T. Andrew Culbert, Microsoft Corporation, Redmond, WA, for Defendant, of Counsel.

MEMORANDUM AND ORDER

PAULEY, J.

On June 4, 2001, plaintiff AT & T Corp. ("AT & T") filed this patent infringement action alleging that certain of defendant Microsoft Corporation's ("Microsoft") products containing speech codecs[1] infringe its United States Reissue Patent No. 32,580 (the "580 patent").[2] Currently before this Court is Microsoft's motion for partial summary judgment[3]

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[1] "A speech codec is a software program that is capable of coding—converting a speech signal into a more compact code—and decoding—converting the more compact code back into a signal that sounds like the original speech signal." Amended Complaint ("Am.Compl.") ¶ 14.

[2] Familiarity with this Court's prior Memoranda and Orders is presumed. *See, e.g.*, *AT & T Corp. v. Microsoft Corp.*, 01 Civ. 4872(WHP), 2003 WL 21459573 (S.D.N.Y. June 24, 2003) (construing claims in the 580 patent); *AT & T Corp. v. Microsoft Corp.*, 01 Civ. 4872(WHP) (S.D.N.Y. Sept. 3, 2003) (amending construction of the term "representative"); *AT & T Corp. v. Microsoft Corp.*, 290 F.Supp.2d 409 (S.D.N.Y. 2003) (granting partial summary judgment limiting damages pursuant to the patent marking statute, 35 U.S.C. § 287(a)); *AT & T Corp. v. Microsoft Corp.*, 01 Civ. 4872(WHP), 2004 WL 188078 (S.D.N.Y. Feb. 2, 2004) (granting partial summary judgment prohibiting Microsoft from asserting the defenses of equitable estoppel and implied license); *AT & T Corp. v. Microsoft Corp.*, 01 Civ. 4872(WHP), 2004 WL 232725 (S.D.N.Y. Feb. 9, 2004) (granting partial summary judgment prohibiting Microsoft from asserting the defense and counterclaim of inequitable conduct); *AT & T Corp. v. Microsoft Corp.*, 01 Civ. 4872(WHP), 2004 WL 292321 (S.D.N.Y. Feb. 17, 2004) (denying partial summary judgment on invalidity); *AT & T Corp. v. Microsoft Corp.*, 01 Civ. 4872(WHP), 2004 WL 309150 (S.D.N.Y. Feb. 19, 2004) (amending construction for term "excitation").

[3] Microsoft originally styled this motion as one *in limine* to exclude evidence of foreign sales. On March 4, 2004, the parties

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to exclude sales of goods incorporating foreign-replicated copies of its infringing Windows software[4] from any damages award, pursuant to 35 U.S.C. § 271(f). For the reasons set forth below, Microsoft's motion is denied.

This case presents a novel issue regarding the application of Section 271(f) with profound ramifications for Microsoft and other United States software manufacturers. In the end, the issue of liability under Section 271(f) for foreign replication of infringing software supplied from the United States is a question of law ripe for review by the Federal Circuit.

BACKGROUND

The facts underlying this motion are not in dispute, and are drawn from a Stipulated Statement of Facts, dated March 4, 2004, and marked as Court Exhibit 1. (Trial Tr. at 1064.) Microsoft conceives, writes, compiles, tests, debugs and creates a master version of its Windows operating system software in Redmond, Washington. Microsoft makes a limited number of "golden master" disks in the United States on which the machine-readable object code[5] for the Windows

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stipulated in open court to convert the motion to one for partial summary judgment. (Trial Transcript, dated March 4, 2004 ("Trial Tr .") at 1063-64.)

[4] For purposes of this motion only, this Court assumes that the object code and software at issue infringe AT & T's 580 patent.

[5] According to Microsoft Corporation, its software engineers develop a source code, which is the "human readable form of the software." The source code is put through a compiler which transforms it into object code. Object code is merely the "machine readable version" of the source code in the form of ones and zeros. The object code is then burned onto the golden master disk by a laser for easier transport abroad. (Transcript of Oral Argument,

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operating system software is stored. Some golden master disks are shipped abroad to foreign computer manufacturers, known as foreign "original equipment manufacturers," or "OEMs". Pursuant to licensing agreements with Microsoft, those foreign OEMs use the golden master disks to install foreign-replicated copies of the Windows operating system software onto foreign-assembled computers. While each OEM receives a single golden master disk, that disk is never installed on a computer sold to consumers. Instead, the golden master disk is used by the OEM to obtain and then replicate object code to install on foreign-assembled computers.

Microsoft also ships golden master disks to Microsoft-authorized foreign "replicators" who make copies of the Windows operating system software object code and ship those foreign-replicated copies to foreign computer manufacturers.

Additionally, Microsoft supplies its Windows operating system object code from the United States to certain foreign OEMs and authorized foreign replicators by sending them a single encrypted electronic transmission of the object code that was created in the United States. The foreign OEMs and replicators decrypt the transmission and install copies of the object code for the Windows operating system software onto computer hardware to form computer systems, and optionally create CDs or other media containing a foreign-replicated copy of the object code.

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dated December 12, 2003 ("Tr.") at 5-6.) *See also Microsoft Corp. v. Comm'r of Internal Revenue*, 311 F.3d 1178, 1181, 1187 (9th Cir. 2002) (describing golden masters).

During the time relevant to this action, the golden master disks and the encrypted electronic transmissions that Microsoft sends overseas included copies of the accused codecs that infringe AT & T's 580 patent. Microsoft acknowledges that it ships the golden masters and sends the encrypted electronic transmissions containing the infringing object code with the intent and knowledge that the software will be installed on foreign-manufactured computers. Microsoft further acknowledges that it ships the golden masters and encrypted electronic transmissions containing the infringing object code with the intent that the foreign OEMs and authorized replicators will make copies of the object code for the Windows operating system and install those copies onto computer hardware. This computer hardware is manufactured overseas and the completed systems containing the object code created in the United States are then sold to end-users overseas. The parties agree that, other than the object code contained on the golden master disks and the encrypted electronic transmissions of Windows object code, Microsoft does not supply any other "component" from the United States for assembly abroad. Additionally, Microsoft acknowledges that the copying of the software from the golden master disks and the encrypted electronic transmissions overseas is an essential part of the manufacturing process abroad for computers containing Windows. (Tr. at 9.)

AT & T alleges that Microsoft's foreign sales of its Windows software containing the allegedly infringing codecs constitute acts of infringement under 35 U.S.C. § 271(f) that trigger liability and damages. Microsoft contends that Section 271(f) does not attach liability to foreign-replicated copies of its object code because it falls outside the purview of Section 271(f)'s prohibition on foreign assembly of infringing goods. Specifically, Microsoft argues that the object code or software contained on the golden master disks is merely "intangible information," and thus not a "component" as contemplated by Section 271(f). Additionally, Microsoft

argues in its reply brief that Section 271(f) does not attach liability to foreign-replicated copies of the software or object code because the copies themselves are not "supplied from" the United States. Microsoft's arguments are without merit.

I. *Summary Judgment Standard*

Rule 56(c) of the Federal Rules of Civil Procedure provides that summary judgment "shall be rendered forthwith if the pleadings, depositions, answers to interrogatories and admissions on file, together with the affidavits, if any, show there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c); *accord Celotex Corp. v. Catrett*, 477 U.S. 317, 322, 106 S.Ct. 2548, 91 L.Ed.2d 265 (1986); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247, 106 S.Ct. 2505, 91 L.Ed.2d 202 (1986). The burden of demonstrating the absence of any genuine dispute as to a material fact rests with the moving party. *See, e.g., Adickes v. S.H. Kress & Co.*, 398 U.S. 144, 157, 90 S.Ct. 1598, 26 L.Ed.2d 142 (1970); *Grady v. Affiliated Cent., Inc.*, 130 F.3d 553, 559 (2d Cir. 1997). The movant may meet this burden by demonstrating a lack of evidence to support the nonmovant's case on a material issue on which the nonmovant has the burden of proof. *Celotex*, 477 U.S. at 323.

To defeat a summary judgment motion, the nonmoving party must do "more than simply show that there is some metaphysical doubt as to the material facts." *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 586, 106 S.Ct. 1348, 89 L.Ed.2d 538 (1986). Indeed, the nonmoving party must "set forth specific facts showing that there is a genuine issue for trial." Fed. R. Civ. P. 56(e); *accord Matsushita Elec.*, 475 U.S. at 587. In evaluating the record to determine whether there is a genuine issue as to any material fact, the "evidence of the nonmovant is to be believed and all justifiable inferences are to be drawn in his favor." *Liberty*

Lobby, 477 U.S. at 255; *accord Schering Corp. v. Geneva Pharms.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003).

II. *Section 271(f) of the Patent Act*

Section 271(f) of the Patent Act was enacted to prevent infringers from escaping liability under United States patent law by manufacturing or supplying a component of a patented invention from the United States and exporting it for combination into an end product overseas. *Imagexpo, L.L.C. v. Microsoft Corp.*, No. Civ. A. 3:02CV751, 2003 WL 23147556, at *1 (E.D. Va. Aug. 19, 2003); *accord* 35 U.S.C. § 271(f); *Aerogroup Int'l, Inc. v. Marlboro Footworks, Ltd.*, 955 F.Supp. 220, 232 (S.D.N.Y. 1997) (citing *Windsurfing Int'l, Inc. v. Fred Ostermann GmbH*, 668 F.Supp. 812, 820-21 (S.D.N.Y. 1987), *aff'd*, 1 F.3d 1214 (Fed.Cir.1993)); H.R. 6286, Patent Law Amendments Act of 1984, Congressional Record, Oct. 1, 1984, 28069 at H10525-6 ("Legislative History") (Section 271(f) "prevent[s] copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad."). Components supplied from foreign countries and incorporated into foreign-assembled products do not implicate Section 271(f). *Aerogroup Int'l*, 955 F.Supp. at 232. Section 271(f) states:

> (1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f).

Under paragraph (1) components may be staple articles or commodities of commerce which are also suitable for substantial non-infringing use, but under paragraph (2) the components must be especially made or adapted for use in the invention. *See Bristol-Myers Squibb v. Rhone-Poulenc Rorer, Inc.*, 95 Civ. 8833 (RPP), 2001 WL 1263299, at *4-5 (S.D.N.Y. Oct. 19, 2001). Additionally, paragraph (2) requires the infringer to have an intent that a component "will be combined outside of the United States in a manner that would infringe if the combination occurred within the United States." 35 U.S.C. § 271(f)(2). "Actual combination or assembly of the components by the alleged infringer [is] not required" to trigger liability under Section 271(f). *Waymark Corp. v. Porta Sys. Corp.*, 334 F.3d 1358, 1361 (Fed. Cir. 2003). Here, it is undisputed that Microsoft's object code is especially made and supplied from the United States for use in its Windows operating system, that Microsoft intended the components to be combined outside of the United States, and that Microsoft intended that the infringing object code be di-

rectly incorporated as an essential part of the foreign-manufactured computers. (Court Ex. 1; Tr. at 9.)

Congress enacted Section 271(f) in response to *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 92 S.Ct. 1700, 32 L.Ed.2d 273 (1972), where the Supreme Court recognized a "loophole" in infringement law allowing copiers to escape liability by finalizing assembly of products outside the United States. *See* H.R. 6286, Patent Law Amendments Act of 1984, Congressional Record, Oct. 1, 1984, 28069, H10525-6. In *Deepsouth*, the Supreme Court held that manufacturing components of a patented invention in the United States, but assembling those components into the patented invention outside the United States, was not "making," and thus did not constitute infringement under Section 271(a) of the Patent Act. 406 U.S. at 527-28. In the wake of *Deepsouth*, Congress enacted Section 271(f) to prevent infringers from exploiting that loophole. *See* H.R. 6286, Patent Law Amendments Act of 1984, Congressional Record, Oct. 1, 1984, 28069, H10525-6. The legislative history of Section 271(f) reads in pertinent part:

Part of the subcommittee's job is to secure for the owners of intellectual property, including patent holders, a workable, efficient, and vigorous set of laws to protect their creations. . . . [W]ithout enactment of these housekeeping-oriented measures, *the patent system would not be responsive to the challenges of a changing world* and the public would not benefit from the release of creative genius. . . . Section 101 [of the Bill] makes two major changes in the patent law in order to avoid encouraging manufacturing outside the United States . . . . [Section 271(f)] will prevent *copiers* from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to [*Deepsouth*] concerning the need for a legislative solution to close a loophole in patent law.

H.R. 6286, Patent Law Amendments Act of 1984, Congressional Record, Oct. 1, 1984, 28069, H10525 (emphasis added).

Section 271(f) bridges the *Deepsouth* synapse by including as infringement under the Patent Act the assembly of any component of a patented invention, supplied from the United States, into a product assembled outside of the United States. 35 U.S.C. § 271(f). Microsoft does not dispute the construction of Section 271(f), but argues that: (1) its object code or software is not a "component" under Section 271(f); and (2) its foreign-replicated copies are not "supplied from" the United States. Otherwise, Microsoft acknowledges that its actions satisfy the requirements of Section 271(f). (Court Ex. 1.)

III. *Software as a Component*

Microsoft argues that foreign-replicated copies of its Windows operating system software cannot be statutory "components" supplied from the United States to form foreign-assembled computer systems because "the infringing Windows operating system software stored on the golden master disks [and sent electronically] is intangible information," and the golden master disk is "simply a medium for transmission of the software information," and is never incorporated into an end product abroad. (MS Br. at 1; Court Ex. 1.) The object code or software that is contained on each golden master disk or transmitted electronically, as opposed to the golden master disk or method of encrypted transmission itself, is at the heart of the parties' dispute and this Court's analysis. It is undisputed that the infringing software is intentionally shipped abroad for incorporation into foreign-assembled computers. (Court Ex. 1.) Indeed, the golden master disk simply recognizes the economic efficiencies in shipping Microsoft's software abroad, and does not alone insulate Microsoft from liability under Section 271(f). *See*

Eolas Techs. Inc. v. Microsoft Corp., 99 C0626, 2004 WL 170334, at *3-5 (N.D. Ill. Jan. 15, 2004).

Microsoft argues that its infringing software must be a "physical product" to constitute a "component" under Section 271(f). As noted, Section 271(f) precludes exportation of certain "component(s)" of patented inventions. 35 U.S.C. § 271(f). Microsoft contends that infringing software transported by golden master disk or through electronic transmission is merely "intangible information," and thus not a "component" as contemplated by Section 271(f). It is well-established, however, that software can be a component of a patented invention or infringing device. *See, e.g., In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) ("[A] computer operating pursuant to software may represent patentable subject matter, provided, of course, that the claimed subject matter meets all the other requirements of Title 35."); *Imagexpo, L.L.C. v. Microsoft Corp.*, No. Civ. A 3:02CV751, 2003 WL 23147556 (E.D. Va. Aug. 19, 2003) (in examining Microsoft NetMeeting units exported overseas on golden master disks, holding that Microsoft's "code is a patentable apparatus" and that the golden master and code constitute "components" under Section 271(f)); *Eolas Techs. Inc. v. Microsoft Corp.*, 274 F.Supp.2d 972, 973 (N.D. Ill. 2003) (holding that the software in a computer product "is, in law, the legal equivalent of a piece of computer hardware and not the legal equivalent of a chemical formula"); *NTP, Inc. v. Research In Motion, Ltd.*, 261 F.Supp.2d 423, 431 (E.D. Va. 2002) (noting that defendant supplied "application programs" that are "components combined with [an] Intel processor outside the United States" and especially adapted for use in the infringing product); United States Patent & Trademark Office Manual of Patent Examining Procedure (the "MPEP") § 2106, at 2100-13 (8th ed.2003) (noting that a computer program has functional and structural elements, can be recited as part of a claim, statutory manufacture or machine, and noting that "[w]hen a computer program is recited in conjunction with a

physical structure, such as a computer memory, Office personnel should treat the claim as a *product* claim.") (emphasis added); *see also Southwest Software, Inc. v. Harlequin Inc.*, 226 F.3d 1280, 1287-88, 1298-99 (Fed. Cir. 2000). Indeed, Microsoft acknowledges that software is patentable (Tr. at 10; MS Reply at 1), and it argued successfully to the Ninth Circuit that its golden master disks that contain the object code at issue here were tangible export property for tax purposes. *Microsoft Corp. v. Comm'r of Internal Revenue*, 311 F.3d 1178, 1185 (9th Cir. 2002) (holding that the software or object code contained on the golden master disks was "export property," that only contemplates tangible property, and finding "computer software reproductions similar to 'films, tapes, [and] records'") (alteration in original). Tellingly, Microsoft retreated from this argument in its reply brief and at oral argument.

Microsoft urges this Court to narrowly interpret the term "component" in Section 271(f) to exclude software or object code. However, there is no limitation of the term "components," either in the statutory text or in the legislative history, to machines or other structural combinations. *W.R. Grace & Co. v. Intercat, Inc.*, 60 F.Supp.2d 316, 320-21 (D. Del. 1999) (finding 271(f) liability for supply of chemical composition from the United States for combination with other materials abroad); *see also Moore U.S.A. Inc. v. Standard Register Co.*, 144 F.Supp.2d 188, 195 (W.D.N.Y. 2001) (finding paper, glue and blueprints for making envelopes "components" under 271(f)); *Lubrizol Corp. v. Exxon Corp.*, 696 F.Supp. 302, 325 (N.D. Ohio 1988) (same for supply of lubricant additive for combination in a lubricant composition outside the United States). Further, there is nothing in the legislative history of Section 271(f) or in any jurisprudence interpreting it to say that software cannot be a component under Section 271(f). *W.R. Grace*, 60 F.Supp.2d at 321 ("A contrary holding . . . would be tantamount to legislating additional language to a statute."). Indeed, excluding protection

for inventions using software "would not be responsive to the challenges of a changing world," as software and computers have become an essential part of society and business since the enactment of Section 271(f). H.R. 6286, Patent Law Amendments Act of 1984, Congressional Record, Oct. 1, 1984, 28069, H10525.

Microsoft cites to several cases in support of its contention that software cannot be a component under Section 271(f). (MS Br. at 9-10.) Those cases are distinguishable, as they all involve design or method patents, which have no components, or instructions for assembly of products abroad, which is not a component. *See, e.g., Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991) (holding 271(f) inapplicable to a method patent for producing asphalt, "not the apparatus for implementing that process"); *Enpat, Inc. v. Microsoft Corp.*, 6 F.Supp.2d 537, 538-39 (E.D. Va. 1998) (finding no 271(f) liability for a method patent with no components where the patent only described steps required to accomplish a task); *Pellegrini v. Analog Devices, Inc.*, C.A. No. 02-11562-RWZ, 2003 WL 21026797, at *1 (D. Mass. May 7, 2003) (finding no 271(f) liability for exportation of instruction for foreign disposal of computer chips); *Aerogroup Int'l*, 955 F.Supp. at 231-32 (Section 271(f) inapplicable for a design patent for a shoe sole where the patent claimed no "components" and the soles were manufactured abroad).

Notably, the two other courts that have considered the precise issue before this Court have held that Microsoft's export of its golden master disks containing infringing code constitutes the supply of a "component" under Section 271(f). *Eolas Techs. Inc. v. Microsoft Corp.*, 274 F.Supp.2d 972 (N.D. Ill. 2003), *reconsideration denied*, 2004 WL 170334, at *3-5 (N.D. Ill. Jan. 15, 2004); *Imagexpo LLC v. Microsoft Corp.*, 2003 WL 23147556 (E.D. Va. Aug. 19, 2003). Additionally, in *NTP, Inc. v. Research in Motion,*

Ltd., 261 F.Supp.2d 423, 436-37 (E.D. Va. 2002), a district court granted summary judgment of infringement pursuant to Section 271(f), finding that the defendant's transmission network for its Blackberry wireless email/paging devices manufactured in Canada fell within Section 271(f) because it incorporated domestically-supplied components, such as Microsoft's Exchange Server software, that the defendant combined outside the United States. Microsoft only distinguishes these cases by noting that they were decided before *Bayer AG v. Housey Pharms., Inc.*, 340 F.3d 1367 (Fed. Cir. 2003). (Tr. at 18; MS Reply Br. at 6.)

Microsoft argues that *Bayer* compels a finding that it is not liable for infringement and damages for foreign sales of computers containing the infringing software. In *Bayer*, the Federal Circuit addressed the term "component" in Section 271(g) of the Patent Act. *Bayer*, 340 F.3d at 1376-77. Section 271(g) prohibits importation into the United States of products produced by "patented manufacturing processes, i.e., methods of actually making or creating a product as opposed to methods of gathering information about, or identifying a substance worthy of further development." *Bayer*, 340 F.3d at 1370. In dicta, the Federal Circuit stated that the term "component" in Section 271(g) "appears to contemplate a physical product." *Bayer*, 340 F.3d at 1376-77. However, Microsoft wrenches the Federal Circuit's comment out of its context; it is not the clear statement of law on Section 271(f) liability that Microsoft would have this Court adopt.

In *Bayer*, the Federal Circuit held that Section 271(g) does not proscribe the transmission of "information" into the United States. 340 F.3d at 1371. The "information" in *Bayer*, however, was markedly different than the software or object code at issue here. The information in *Bayer* was data generated from a patented method to identify whether a given substance had a particular property, namely, whether that substance activated or inhibited protein activity in a cell.

Bayer, 340 F.3d at 1369. This data could be used to identify effective drugs for treating diseases. The patentee alleged that Bayer used the patented process outside the United States, subsequently imported into the United States *the data generated from that process*, identified effective drugs from that data, and manufactured those drugs in the United States. *Bayer*, 340 F.3d at 1369-70. The Federal Circuit held that importation of the data generated from the patented process did not infringe under Section 271(g) because that Section is directed towards articles of manufacture, and not data or "information" used to identify those articles. *Bayer*, 340 F.3d at 1370. Indeed, the data produced from the patented process abroad was not directly used to manufacture the drugs at issue in the United States. *Bayer*, 340 F.3d at 1369-70.

Bayer's holding does not advance this Section 271(f) analysis because: (1) *Bayer* only applies to Section 271(g);[6] and (2) the "information" or "data processing" that resulted from a patented process in *Bayer* is completely unrelated to the software or object code at issue here. For example, here the software or object code itself is an essential part of the end product and component-assembly abroad. In contrast, in *Bayer* the resulting data created by a patented process was transferred to the United States from abroad and was ultimately used to identify drugs which were then manufactured in the United States. *Bayer*, 340 F.3d at 1368-69. Thus, in *Bayer*, the transmitted "data" at issue was not incorporated into the end-product; it was the result of a patented process, not part of it. In this action, the object code at issue actually contains the patented codecs, which are not derived from a

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[6] Indeed, the only mention of Section 271(f) in *Bayer* is a passing reference to Congress's intent to avoid encouragement of manufacturing infringing goods outside the United States. *Bayer*, 340 F.3d at 1371.

similar method patent, and the infringing code is sent overseas to be incorporated directly into the end-product abroad.

Citing the dicta in *Bayer*, Microsoft argues that the object code contained on the golden master is intangible information, and thus cannot trigger liability under Section 271(f). Microsoft's argument, however, relies heavily on the presumption that the object code on the golden master disks and in the encrypted transmissions is the type of intangible information or data from a patented process that did not trigger Section 271(g) liability in *Bayer*. As noted above, this Court rejects that presumption.

IV. *Foreign-Replicated Copy as a Component*

In its reply brief, Microsoft advances the argument that a foreign-replicated copy of the infringing software does not constitute a "component" supplied from the United States, and thus cannot trigger Section 271(f) liability. This Court heard AT & T's response at oral argument, and agrees with its position.

Microsoft contends that since the object code eventually incorporated into the foreign computers is *replicated abroad*, those foreign-replicated copies cannot be considered to be a component "supplied from" the United States. Specifically, Microsoft argues that the foreign-replicated copies cannot "be said to have been 'supplied' from the U.S. even though they never touched U.S. soil." (MS Reply Br. at 1.) Essentially, Microsoft seeks to equate replication of the object code abroad with the manufacturing or "supply" of it from abroad. Microsoft's argument ignores the undisputed fact that the object code is originally manufactured in the United States, and supplied from the United States to foreign replicators or OEMs with the intention of incorporating such software into foreign-assembled computers. (Court Ex. 1.) The fact that Microsoft ships one golden master disk or sends one electronic transmission with the infringing object code to each foreign OEM, rather than shipping one CD for each computer

for efficiency purposes, cannot shield Microsoft from the letter and intent of the statute—to prohibit circumvention of infringement of a United States patent by supplying certain infringing components from the United States, and shipping them abroad for incorporation into a finished product that would infringe if assembled in the United States.[7] *See* 35 U.S.C. 271(f); H.R. 6286, Patent Law Amendments Act of 1984, Congressional Record, Oct. 1, 1984, 28069, H10525; *Imagexpo*, 2003 WL 23147556; *Eolas Techs.*, 2004 WL 170334, at *3-5.

In support of its argument, Microsoft analogizes its software to a "mold" for tires that is exported to a foreign plant to make tires there for combination with foreign-made cars. Microsoft argues that its software, like the foreign-molded tires, cannot be said to be components of the patented combination "supplied" from the United States because Section 271(f) looks to the place from which the "component" in question was made and supplied. Unlike the tires that are manufactured from a mold, however, the software here has already been manufactured in, and supplied from, the United States and is only copied abroad—the software is not a mold for the creation of another separate type of component. Indeed, there is no evidence before this Court that the foreign-incorporated object code or software is being created anew from instructions concerning a process for creating code abroad. *See Enpat*, 6 F.Supp.2d at 538-39 (finding no 271(f) liability for a method patent with no components where the

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[7] Indeed, at oral argument, Microsoft acknowledged that if individual disks with the infringing Windows operating system object code were sent abroad for incorporation into each foreign-assembled computer (rather than one golden master disk), Microsoft would be liable for infringement under Section 271(f). (Tr. at 16, 28.) Under this scenario, Microsoft would be liable for direct infringement under Section 271(f). *NTP*, 261 F.Supp.2d at 436-37.

patent only described steps required to accomplish a task); *Pellegrini*, 2003 WL 21026797, at *1 (finding no 271(f) liability for exportation of instruction for foreign disposal of computer chips). Further, Microsoft's tire mold is devoid of any content until rubber is poured into it and a separate and distinct object, a tire, is created. Here, again, the software itself is the component, or the "tire", rather than a mold.

As noted in *Imagexpo*, the golden master or electronic transmission at issue here contains object code that becomes an essential component of the finished computer product. "In other words, the overseas replicator [or OEMs] do[ ] not simply construct the computer product using a plan, design, or recipe supplied by Microsoft. Instead, the functional nucleus of the finished computer product is driven by the code, which is transmitted through the golden master." *Imagexpo*, 2003 WL 23147556. This Court agrees and finds Microsoft's "tire mold" analogy unpersuasive.

V. *Policy Argument*

Finally, Microsoft advances a "doomsday" policy argument to buttress its position, namely that if Section 271(f) liability attaches to foreign distribution of its infringing software, it "would simply pick up [its] manufacturing operation for the golden master, go [one] hundred miles north to Vancouver, set up the operation in Vancouver, [and] burn [its] golden master CDs [there]." (Tr. at 21-22.) Microsoft asserts that this would be the only option to "reduce by two-thirds our exposure in all of these patent cases" relating to Section 271(f) liability for worldwide sales.[8] (Tr. at 22.) Additionally, Microsoft complains that, unlike United States-based companies, foreign software companies do not face

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[8] Notably, Microsoft's policy argument does not address distribution of the infringing software through electronic transmission.

Section 271(f) liability, and can sell software world-wide without incurring the same liability in the United States. (Tr. at 22.) While this Court appreciates Microsoft's concerns about a paradigm shift for United States software manufacturers, those concerns are better addressed through manufacture of non-infringing goods or Congressional action, rather than a judicial engraftment on Section 271(f) of the Patent Act.

CONCLUSION

For the reasons set forth above, defendant Microsoft Corporation's motion for partial summary judgment pursuant to 35 U.S.C. § 271(f) is denied.

APPENDIX C

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

04-1285

AT&T Corp.,

Plaintiff-Appellee,

v.

MICROSOFT CORPORATION,

Defendant-Appellant.

ORDER

UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

A petition for rehearing en banc having been filed by the APPELLANT, and a response thereto having been invited by the court and filed by the APPELLEE, and the matter having first been referred as a petition for rehearing to the panel that heard the appeal, and thereafter the petition for rehearing en banc and response having been referred to the circuit judges who are in regular active service,*

UPON CONSIDERATION THEREOF, it is

ORDERED that the petition for rehearing be, and the same hereby is, DENIED and it is further

ORDERED that the petition for rehearing en banc be, and the same hereby is, DENIED.

The mandate of the court will issue on October 27, 2005.

Circuit Judge GAJARSA did not participate in the vote.

FOR THE COURT,

/s/
Jan Horbaly
Clerk

Dated: October 20, 2005

cc: Dale M. Heist
Stephen C Neal
John D. Vandenberg, Frank Scherkenbach
Janine A. Carlan

AT&T V MICROSOFT, 04-1285
(DCT - 01-CV-4872)

* Two amicus curiae briefs were filed and circulated.

Note: Pursuant to Fed. Cir. R. 47.6, this order is not citable as precedent. It is a public record.

APPENDIX D

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

AT&T Corp. Plaintiff, v. MICROSOFT CORPORATION Defendant.	01 Civ. 4872 (WHP) STIPULATED JUDGMENT

On June 4, 2001, plaintiff AT&T Corp. ("AT&T") filed this patent infringement action alleging that certain of defendant Microsoft Corporation's ("Microsoft") products containing speech codecs infringe its United States Reissue Patent No. 32,580 (the "580 patent"). The parties have now reached a settlement pursuant to which they have agreed to the entry of judgment based on the record and the stipulated facts as set forth in Court's Exhibit 1, and have also agreed that neither party would appeal any issue with one exception: both parties intend that Microsoft will reserve one issue for appeal, namely this Court's ruling with respect to Microsoft's liability under 35 U.S.C. § 271(f).

WHEREAS, the Parties have agreed and hereby stipulate, by and through their counsel of record herein, that judgment be entered in favor of AT&T and against Microsoft as follows:

IT IS HEREBY ORDERED, ADJUDGED and DECREED THAT, final judgment shall be entered in favor of AT&T and against Microsoft as follows:

1. U.S. Patent Number Reissue 32,580 (the '580 patent) has been infringed under 35 U.S.C. § 271(a) and (b), is enforceable and not invalid. The parties have agreed to an unconditional settlement payment based upon this ruling.

2. AT&T's infringement claim under 35 U.S.C. § 271(c) is dismissed without prejudice.

3. All of Microsoft's counterclaims are hereby dismissed with prejudice.

4. Based on the stipulated facts, the Court has determined that the golden master disks and the encrypted transmissions of Windows object code contain "components" supplied from the United States by Microsoft within the meaning of 35 U.S.C. § 271(f) and the Court has further determined that the computer systems assembled abroad with the foreign-replicated Windows object code that was installed from the golden master disks or the encrypted transmissions contain "components" that were supplied by Microsoft from the United States.

5. Based on the Court's determinations set forth in its opinion of March 5, 2004, and hereby adopted by the Court in this final judgment, Microsoft concedes that it has infringed under 35 U.S.C. § 271(f). The parties have agreed upon an additional settlement payment conditioned upon a final appellate determination affirming this Court's ruling under 35 U.S.C.

§ 271(f). Accordingly, the Court hereby enters judgment in favor of AT&T and against Microsoft on AT&T's claims pursuant to 35 U.S.C. § 271(f).

6. The parties intend that Microsoft shall have the right to appeal the Court's determination and the judgment of infringement under 35 U.S.C. § 271(f) entered herewith.

7. This Court shall retain jurisdiction to enforce the terms of the Settlement Agreement between the Parties;

8. The Clerk of the Court is directed to enter the foregoing stipulated judgment as the final judgment in this case.

9. Each party shall bear its own costs and attorneys fees.

DATED: March 5, 2004
New York, New York

/s/
William H. Pauley III, District Judge

/s/
Stephen C. Neal, Esq., Cooley Godward LLP
Counsel for AT&T CORP.

/s/
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APPENDIX E

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

AT&T Corp. Plaintiff, v. MICROSOFT CORPORATION Defendant.	01 Civ. 4872 (WHP) STIPULATED STATEMENT OF FACTS CONCERNING 35 U.S.C. § 271(F)

COURT'S EXHIBIT 1

The parties hereby stipulate to the following facts concerning the issue of infringement pursuant to 35 U.S.C. § 271(f):

1. Plaintiff AT&T Corp. ("AT&T") owns all right, title, and interest in and to United States Patent Number Reissue 32,580 entitled "Digital Speech Coder" (the "'580 Patent");
2. On June 4, 2001, AT&T filed a complaint against defendant Microsoft Corporation ("Microsoft") in

the United States District Court for the Southern District of New York ("District Court"), seeking a judgment that Microsoft has infringed the '580 Patent under 35 U.S.C. § 271 and seeking damages for such infringement (the "Dispute");

3. AT&T has alleged that Microsoft's foreign sales constitute acts of infringement under 35 U.S.C. § 271(f) and the District Court has entered summary judgment that Microsoft's foreign sales are subject to liability in accordance with AT&T's allegation (the "271(f) Ruling");

4. Microsoft conceives, writes, compiles, tests, debugs and creates a master version of its Windows operating system software in Redmond, Washington. Microsoft makes a limited number of "golden master" disks in the United States on which the machine-readable object code for the Windows operating system software is stored;

5. Some golden master disks are shipped abroad to foreign computer manufacturers, known as foreign "original equipment manufacturers" or "OEMs." Pursuant to licensing agreements with Microsoft, those foreign OEMs use the golden master disks to install the foreign-made copies of Windows operating system software onto computers. Each OEM receives a single golden master disk, and that disk itself is never installed on a computer that is then sold. Instead, that golden master disk is used by the OEM to obtain and then replicate object code that is then installed on computers that are sold;

6. Microsoft also ships golden master disks to Microsoft authorized foreign "replicators" who make copies of the Windows operating system software object code and ship those foreign manufactured copies to foreign computer manufacturers;

7. Microsoft also supplies its Windows operating system object code from the United States to certain foreign OEMs and authorized foreign replicators by sending to foreign OEMs or replicators a single encrypted transmission of the object code. The foreign OEMs and replicators decrypt the transmission and install copies of the object code for the Windows operating system software onto computer hardware, to form computer systems, and optionally create CDs or other media with a copy of the same;

8. During the time relevant for this lawsuit, the golden master disks that Microsoft shipped overseas and foreign electronic transmissions included copies of the codecs that AT&T accused of infringing the '580 patent;

9. Microsoft intends that the foreign OEMs and authorized replicators make the copies of the object code for the Windows operating system (created from the golden master disks and/or electronically transmitted software code) and Microsoft further intends that the foreign OEMs and authorized replicators install those copies onto computer hardware. This computer hardware is manufactured overseas; the computer systems are assembled and the completed systems are then sold to end-users overseas.

10. AT&T alleges, and Microsoft disputes, that the "golden master disks" and the encrypted transmissions of Windows object code constitute "components" within the meaning of 35 U.S.C. 271(f). AT&T alleges, and Microsoft disputes, that the computer systems assembled abroad with the foreign replicated object code contain "components" that were supplied by Microsoft from the United States. In a ruling announced on February 17, 2004, the District Court ruled in favor of AT&T on this is-

sue. The parties agree that, other than the "golden master disks" and the encrypted transmissions of Windows object code, Microsoft does not supply any "component" from the United States for assembly abroad.

11. The District Court ruled in favor of AT&T on all 271(f) issues in an opinion dated March 5th, 2004.

AT&T and Microsoft have entered into a confidential settlement agreement pursuant to which Microsoft has agreed to pay damages to AT&T in connection with AT&T's allegations that Microsoft's United States sales infringe the '580 patent. The settlement agreement obligates Microsoft to make an additional payment of damages to AT&T in the event that the District Court's 271(f) ruling is affirmed on appeal.

/s/
William H. Pauley III, District Judge

/s/
AT&T Corp.

/s/
MICROSOFT CORPORATION

Supreme Court, U.S.
FILED
MAR 2 3 2006
OFFICE OF THE CLERK

No. 05-1056

In the Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORP.,
Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF IN OPPOSITION

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COUNTERSTATEMENT OF THE QUESTIONS PRESENTED

After AT&T presented its case-in-chief to the jury, Microsoft stipulated that AT&T's pioneering '580 patent is valid and that Microsoft infringed in the United States, in part by supplying master copies of its U.S.-developed Windows operating system software to domestic computer manufacturers for assembly into the patented speech-coding apparatus. Microsoft also stipulated that it sends identical master copies of Windows to foreign computer manufacturers with the intent that those manufacturers replicate the software and assemble the identical speech-coding apparatus that Microsoft stipulated infringes AT&T's patent in the United States. The district court entered judgment for AT&T based on 35 U.S.C. § 271(a), (b), and (f) (including (f)(1) and (f)(2)). The Federal Circuit affirmed. Although section 271(f)(2) also is a ground for the judgment, Petitioner elected to exclude section 271(f)(2) from its questions presented. The section 271(f)(1) questions presented are:

1. Whether software may be a "component" of a patented invention under section 271(f)(1). *See AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1369 (Fed. Cir. 2005) (Pet. App. 4a).

2. Whether software replicated abroad from a master version exported from the United States—with the intent that it be replicated—may be deemed "supplied" from the United States for the purposes of section 271(f)(1). *See id.*

PARTIES TO THE PROCEEDINGS AND RULE 29.6 STATEMENT

There are no parties to the proceedings other than those listed in the caption.

Respondent AT&T Corp.'s parent company is AT&T, Inc., which holds 100% of the stock of AT&T Corp.

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BRIEF IN OPPOSITION

SUMMARY OF REASONS TO DENY THE PETITION

The Court recently denied Microsoft's certiorari petition in a case presenting the identical issue of liability for patent infringement under 35 U.S.C. § 271(f) based on conduct in the U.S. In this case, Microsoft stipulated that it infringed AT&T's valid patent in the U.S. based on Microsoft's supply of software to domestic computer manufacturers for replication and loading into infringing devices. Microsoft's liability under section 271(f)(1) is based on identical conduct: Microsoft's supply of the same software to foreign computer manufacturers with the intent that it be replicated and loaded into the same devices that Microsoft admits infringe when assembled in the United States. Developments since the denial of certiorari in the *Eolas* case make Microsoft's Petition in this case even weaker because recent legislative activity suggests Congress has ratified the result in both cases by rejecting the attempts of Microsoft and others to amend the statute. Microsoft's Petition should also be denied because there is no conflict among the Circuits or within the decisions of the Federal Circuit. Furthermore, the Federal Circuit reached the correct result. The court's construction does not expand the extraterritorial reach of U.S. patent laws, but instead appropriately focuses on the activities of Microsoft as a domestic supplier. Finally, the judgment below rests on an alternative ground that Petitioner elected to exclude from its questions presented. The Court should therefore deny Microsoft's Petition because the case does not qualify for or otherwise merit review in this Court.

STATEMENT OF THE CASE

A. The Invention of the '580 Patent.

In 1981, Bishnu Atal and Joel Remde, two scientists at Bell Telephone Laboratories, invented a pioneering advance in digital speech compression, which is disclosed and claimed in U.S. Patent Re 32,580. Their breakthrough greatly enhanced the sound quality of synthesized speech while maintaining high data compression. Ct. App. JA 711.

From the outset, the implementation of the invention has required a machine, such as a computer *programmed by software*, to perform the patented speech coding and decoding operations. Ct. App. JA 493-94. Dr. Atal included as appendices to the '580 patent excerpts of the implementing software program he wrote. '580 patent appendices A-D (Ct. App. JA 104-108). The patent expressly teaches the use of this software to carry out the speech-coding operations essential to the invention. *See* '580 patent col.5, ln.68-col.6, ln.9; col.8, ll.37-40 (Ct. App. JA 102-103).

Although at the time of the invention it could be implemented only by using very large supercomputers, dramatic improvements in microprocessors in the 1990s enabled widespread implementation of the invention via software running on personal computers and microprocessor chips. During that period, the invention was adopted by international telecommunications organizations for important industry standards, and was widely licensed by AT&T to numerous third parties and used in numerous products. Ct. App. JA 708, 1033-43. The '580 patent is recognized as a seminal technology employed today in mobile telephones,

personal computers, videoconferencing services and products that operate over the Internet, all using software programs to achieve significant compression and high-quality reproduction of speech. It is not merely "one of the thousands of unexploited patents comprising the modern 'patent thicket'" as Petitioner contends. Pet. at 20. To the contrary, the '580 patent is a technological breakthrough that has been widely praised; Dr. Atal has received numerous prestigious awards attributed to the invention. Ct. App. JA 509-10.

B. Microsoft's Distribution of Infringing Software.

It is undisputed that Microsoft conceives of, writes, compiles, tests, debugs, and creates a master version of its flagship Windows operating system software in Redmond, Washington. Pet. App. 45a. The Windows software is assembled and becomes operational in its final form in the United States. Microsoft supplies the Windows software to foreign and domestic computer manufacturers on so-called "golden master" disks or via electronic transmissions. The computer manufacturers then use these master versions to install the Windows software into the computer products that they manufacture. Pet. App. 45a-46a. As a result, the same software code—the same "zeros and ones" created in the U.S. by Microsoft programmers—is assembled on foreign computers in the very same manner as it is on domestic computers.

Although others in the industry licensed AT&T's patented technology on reasonable and non-discriminatory terms, Microsoft refused to obtain a license. Ct. App. JA 1044-1052. Without authorization, Microsoft incorporated into Windows certain speech-coding software (known as "codecs") that use the invention of the '580 patent. After licensing

discussions broke down, AT&T filed suit against Microsoft for infringing the '580 patent. *See id.*

C. Proceedings Below.

At trial, after AT&T presented its case-in-chief to the jury, Microsoft stipulated to infringement under 35 U.S.C. § 271(a) (direct infringement within the United States) and 271(b) (active inducement of infringement), and to the validity and enforceability of the '580 patent. Pet. App. 42a. Microsoft's stipulated infringement and inducement in the U.S. was based in part on its supply of Windows software (including the infringing codecs) on golden master disks and via electronic transmissions to U.S. computer manufacturers, who then installed the same Windows software onto computers to create fully assembled, infringing systems.

AT&T also claimed that Microsoft infringed under section 271(f), which includes both (f)(1) and (f)(2). *See* Pet. App. 24a, 25a-27a. Microsoft's liability under those sections was premised on the same conduct Microsoft admitted infringed under sections 271(a) and (b). Microsoft supplies its Windows software products to foreign computer manufacturers on golden master disks and through electronic transmissions, with the intent that those manufacturers install the Windows software onto computers to create fully assembled systems. Microsoft moved for partial summary judgment of non-infringement under section 271(f).

The district court denied Microsoft's motion. Relying on established patent jurisprudence and the text and legislative history of section 271(f), the court rejected Microsoft's argument that its software is intangible and therefore cannot be a "component" under section 271(f). Pet. App. 29a-35a. The district court also rejected Microsoft's contention that a

foreign-replicated copy of the infringing software does not constitute a component supplied from the United States, based on Microsoft's stipulation that it supplies the software with the intent that an exact copy of the U.S.-manufactured software be incorporated into foreign-assembled computers. Pet. App. 35a-37a. Microsoft's counsel also admitted to the district court that sending a separate Windows CD abroad for every computer to be assembled would infringe under section 271(f). Pet. App. 36a n.7. Accordingly, the district court held, based on the stipulated facts, that Microsoft infringed the '580 patent under section 271(f), including both (f)(1) and (f)(2). Pet. App. 20a-38a, 42a-43a.

The United States Court of Appeals for the Federal Circuit affirmed the district court's judgment under section 271(f). Relying on *Eolas Technologies, Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), *reh'g and reh'g en banc denied, cert. denied*, 126 S. Ct. 568 (2005), the panel unanimously agreed that software may be a "component" of a patented invention under section 271(f). Pet. App. 4a & 11a. It also ruled, by a 2-1 majority, that software replicated abroad from a master version of the software developed in and exported from the United States—with the intent that the software be replicated—may be deemed "supplied" from the United States for the purposes of section 271(f).[1]

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[1] Although the opinion states that the "supplied from the United States" issue was one of first impression, it had been previously briefed and argued to the Federal Circuit in *Eolas* and, based on facts identical to those here (supply of Windows software to foreign computer manufacturers for assembly abroad), the court affirmed the judgment under section 271(f). *Eolas*, 399 F.3d at 1339 ("Exact duplicates of the software code on the golden master disk are incorporated as an operating element of the ultimate device."); *see also id.* at 1340-41; Microsoft *Eolas* Appeal Br. at 28, 62-63;

Because Congress did not define the word "supplied" in section 271(f), the court looked to the ordinary, contemporary and common meaning of the term. Pet. App. 6a (quoting *Williams v. Taylor*, 529 U.S. 420, 431 (2000)). Given the nature of the technology, the court concluded that copying is part and parcel of software distribution. It emphasized that Microsoft has taken advantage of the replicable nature of software to distribute its software efficiently. Rather than supply a separate disk for each copy of the software supplied—thus incurring extra material, shipping and storage costs—Microsoft supplies a single master disk that is intended to be replicated easily. In light of the undisputed and stipulated facts and the admissions of Microsoft's counsel, the court reasoned that Microsoft's competing interpretation is incorrect because it would permit liability only when the party acts in an unrealistic manner (namely, supplying the software in a more expensive, labor intensive way). Pet. App. 7a (citing *Haggar Co. v. Helvering*, 308 U.S. 389, 394 (1940)).

The court also examined the legislative history and concluded that its interpretation comports with Congress's purpose in enacting section 271(f). Pet. App. 8a. Congress enacted section 271(f) in response to *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), which exposed a loophole in section 271 that allowed potential infringers to avoid liability by manufacturing the components of patented products in the United States and then shipping them abroad for assembl Congress concluded that, without this "housekeeping-oriented" measure, "the patent system would

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Eolas Opp. Appeal Br. at 12, 58, 60-61. Microsoft previously admitted to this Court that the decision in *Eolas* necessarily decided this issue. Microsoft *Eolas* Cert. Pet. at 8-9 n.2 (Case No. 05-288).

not be responsive to the challenges of a changing world and the public would not benefit from the release of creative genius." Pet. App. 9a (quoting Patent Law Amendments Act of 1984, H.R. 6286, 130 Cong. Rec. 28069 (Oct. 1, 1984)). The court concluded that section 271(f) is a remedial measure that should be construed broadly to effectuate its purposes. *Id.* (citing *Tcherepnin v. Knight*, 389 U.S. 332, 336 (1967)).

The court also reasoned that Microsoft's interpretation would subvert the remedial purpose of the statute by allowing advances in technology to be used to maintain a loophole that the statute was intended to close. Pet. App. 9a-10a. The court concluded that sending a single copy of a software component abroad with the intent that it be replicated creates liability under section 271(f) for those copies. The panel thereafter denied without comment Microsoft's petition for rehearing, and the full court denied without comment Microsoft's petition for rehearing en banc. Pet. App. 39a-40a.

REASONS FOR DENYING THE PETITION

I. The Court Already Concluded This Term That the Questions Presented Do Not Merit Review.

The Court recently denied a certiorari petition in which Microsoft presented the identical issue it raises here. *Microsoft Corp. v. Eolas Techns., Inc.*, Case No. 05-288 (Oct. 31, 2005). In its petition in *Eolas*, Microsoft stated that "*AT&T v. Microsoft* involves the identical issue presented here. ... In both [*Eolas*] and *AT&T*, the Federal Circuit determined that a foreign-made and sold computer that has been programmed with the Windows software code includes

a 'component' that was 'supplied' from the United States and 'combined' with other components to produce the final product within the meaning of § 271(f)." Microsoft *Eolas* Cert. Pet. at 8-9 n.2; *see also id.* at i (question presented). Because the operative facts and legal conclusions relating to section 271(f) are identical in both decisions, this case presents no better a vehicle for review than did *Eolas*.[2] Indeed, given Congress's recent refusal to limit section 271(f) as Microsoft urges (*see infra* p. 21), the justifications for granting Microsoft's present Petition are even weaker now than when Microsoft presented them in *Eolas*. *See Herman & MacLean v. Huddleston*, 459 U.S. 375, 385-86 (1983) (decision by Congress to leave a provision intact suggests that it has ratified the interpretation). The Court's recent decision in *Eolas* not to review this issue was correct.

II. There is No Inter- or Intracircuit Split on the Questions Presented.

The questions presented are purely issues of patent law. Petitioner does not and cannot allege any intercircuit conflicts, because the Federal Circuit has exclusive jurisdiction over the interpretation and application of the patent laws. Moreover, there was never any intercourt conflict about these questions; every court that has considered the issues has reached the same conclusion that the Federal Circuit reached here and in *Eolas*. *See AT&T Corp. v. Microsoft Corp.*, No. 01CV4872,

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[2] Microsoft's attempts to distinguish its petition in *Eolas* are unavailing. Pet. at 29-30. Microsoft does not explain why the Federal Circuit's remand for further proceedings on issues of anticipation, inequitable conduct and prior art defenses rendered *Eolas* ill-suited to address the scope of infringement and damages under section 271(f). *Id.* at 29. In fact, Microsoft argued to the contrary in *Eolas*. Microsoft *Eolas* Cert. Reply Br. at 2-3.

2004 WL 406640 (S.D.N.Y. Mar. 5, 2004), *aff'd*, 414 F.3d 1366 (Fed. Cir.), *reh'g and reh'g en banc denied* (Fed. Cir. 2005); *Eolas Techs. Inc. v. Microsoft Corp.*, 274 F. Supp. 2d 972 (N.D. Ill. 2004), *aff'd*, 399 F.3d 1325 (Fed. Cir.), *reh'g and reh'g en banc denied*, *cert. denied*, 126 S. Ct. 568 (2005); *Eolas Techs. Inc. v. Microsoft Corp.*, No. 99 C 0626, 2004 WL 170334 (N.D. Ill. Jan 15, 2004); *Imagexpo, L.L.C. v. Microsoft Corp.*, No. 02CV751, 2003 WL 23147556 (E.D. Va. Aug. 19, 2003); *NTP, Inc. v. Research In Motion, Ltd.*, 261 F. Supp. 2d 423, 431 (E.D. Va. 2002), *aff'd on different grounds*, 418 F.3d 1282 (Fed. Cir. 2005), *reh'g and reh'g en banc denied*, *cert. denied*, 126 S. Ct. 1174 (2006). The courts have been clear, consistent, and predictable in their application of section 271(f) to software, and there is no need for the Court to exercise its discretionary jurisdiction.

Nor can certiorari be justified on the basis that the decisions below conflict with prior Federal Circuit precedent, because no such conflict exists. Petitioner's effort to manufacture such a conflict rests primarily on *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir.), *cert. denied*, 543 U.S. 1003 (2004). Microsoft raised this argument below, and both the *Eolas* and *AT&T* panels correctly distinguished *Pellegrini*. Pet. App. 7a-8a; *Eolas*, 399 F.3d at 1340-41. The nature of the shipping "instructions" (to people) at issue in *Pellegrini* is fundamentally different from software instructions (for computers) that cause the computers to act as special purpose and infringing machines. *See Pellegrini*, 375 F.3d at 1118 (holding that instructions to people and corporate oversight are not "components" under section 271(f)).

Petitioner's citations to *Bayer*, *Rotec* and the dissent in *Union Carbide* (Pet. at 11, 15, 17 & 19 n.3) also fail to identify any conflicts among Federal Circuit decisions. In

Bayer AG v. Housey Pharmaceuticals, Inc., 340 F.3d 1367, 1368-69 (Fed. Cir. 2003), the court held that importing information about the properties of a substance does not infringe section 271(g). Nevertheless, information about a substance's properties is fundamentally different from the computer software at issue here and in *Eolas* that causes computers to function in a specific manner. In *Rotec Industries, Inc. v. Mitsubishi Corp.*, 215 F.3d 1246, 1257-58 (Fed. Cir. 2000), the patentee admitted that none of the construction equipment components were manufactured in the United States, and the court rejected patentee's argument that an "offer to supply" foreign components infringes under section 271(f). Here, by contrast, it is undisputed that Microsoft wrote, compiled, tested, debugged, and created the Windows software in, and exported that software from, the United States. Finally, in *Union Carbide Chemicals & Plastic Technology Corp. v. Shell Oil Co.*, 434 F.3d 1357, 1358 (Fed. Cir. 2006), the court denied a petition to rehear en banc whether section 271(f) applies to process inventions. Petitioner's attempt to depict Judge Lourie's dissent as rethinking the opinion he authored below (Pet. at 11, 15) is misleading. Judge Lourie explicitly noted that the inventions in *Eolas* and *AT&T* were apparatus inventions, whereas the inventions in *Union Carbide* were methods and processes. 434 F.3d at 1358. Microsoft has simply failed to show the decision below to be in conflict with any other cases applying or interpreting the patent statute.

III. The Federal Circuit's Decision Was Correct.

This Court should deny Microsoft's Petition because the Federal Circuit correctly applied section 271(f) and binding patent-law precedent to the facts of this case.

A. The Federal Circuit's Decision Is in Harmony with Long Standing Patent Jurisprudence That Software Can Be a Component of a Patented Invention or an Infringing Device.

Microsoft's Petition is devoid of citations to any judicial authority holding that software is intangible and cannot be a component of a patented invention. In fact, Microsoft's position conflicts with thirty years of patent jurisprudence, business practices in the software industry, and Microsoft's own patent portfolio. In contrast, the Federal Circuit's decisions here and in *Eolas* are entirely consistent with precedent, Patent Office procedures and policy, and industry practices.

Long standing patent jurisprudence holds that software may be a component of a patented invention. This Court held in *Diamond v. Diehr*, 450 U.S. 175, 187 (1981), that a patent claim may be drawn to statutory subject matter even if it uses a computer program. *See also In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (holding that "a computer operating pursuant to software may represent patentable subject matter"). In fact, a general-purpose computer is nothing more than a "storeroom of parts and/or electrical components" until the computer is programmed; but once the software is introduced, the "commoditized" parts become a special-purpose computer that may be patented. *In re Prater*, 415 F.2d 1393, 1403 n.29 (C.C.P.A. 1969). When such a machine is programmed, it is physically different from the machine without the program; if the software programs the machine in a new and nonobvious way, then the programmed machine is patentable. *In re Bernhart*, 417 F.2d 1395, 1500 (C.C.P.A. 1969); *see also In re Hayes Microcomputer Prods., Inc. Patent Litig.*, 982 F.2d 1527 (Fed. Cir. 1992) (affirming judgment of infringement by devices programmed

to practice the invention). Software may also be the structure corresponding to means-plus-function limitations in a patent claim. *See In re Knowlton*, 481 F.2d 1357, 1368 (C.C.P.A. 1973); *In re Comstock*, 481 F.2d 905, 908-09 (C.C.P.A. 1973).

The procedures of the Patent Office are in complete accord with this case law. The Manual of Patent Examining Procedure (MPEP) notes that computer programs are often recited as part of a patent claim. If the computer program being claimed is part of an otherwise patentable machine, the claim is patentable. MPEP § 2106 at 2100-13 (8th ed. 2003).

Several of the cases cited above explicitly rejected the notion that software is intangible and unpatentable. *See, e.g.*, *In re Alappat*, 33 F.3d at 1545 (rejecting the contention that software running on a computer transforms the computer from a machine into a mathematical algorithm) (citing *Diehr*, 450 U.S. at 187); *In re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994) (rejecting the contention that software data structures are intangible information, and instead holding they are "the essence of electronic structure"); *In re Bernhart*, 417 F.2d 1395 (reversing a rejection of apparatus claims based, in part, on the rationale that a computer is structurally the same with or without its software). *See also Southwest Software, Inc. v. Harlequin Inc.*, 226 F.3d 1280, 1283, 1288 (Fed. Cir. 2000) (noting that the software accused of infringing under section 271(f) was a "device").

This Court long ago recognized that, under patent law, a machine is "a concrete thing, consisting of parts, or of certain devices and combination of devices." *Burr v. Duryee*, 68 U.S. 531, 570 (1863). The Court stressed that a particular machine is defined by its mode of operation, or "that peculiar combination of devices which distinguish it from other

machines." *Id.* The cases cited above demonstrate that computer software may be a device—indeed, perhaps the *only* device—that distinguishes a patented invention from a general-purpose computer. *See, e.g., In re Alappat*, 33 F.3d at 1545; *In re Bernhart*, 417 F.2d at 1399 (stating that the claims recite, and can be infringed only by, a computer programmed to carry out the recited routine); *In re Knowlton*, 481 F.2d at 1368; *In re Comstock*, 481 F.2d at 908-09; *In re Prater*, 415 F.2d at 1403 n.29; *see also State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375 (Fed. Cir. 1998). It logically follows that the distinguishing device—the software—must be a component of that patented invention. *See Burr*, 68 U.S. at 570.

B. The Federal Circuit Properly Read and Applied the Statute to the Stipulated Facts.

1. The Federal Circuit Properly Construed "Components" to Include Software Components.

a. The Federal Circuit's decisions in *Eolas* and *AT&T* properly construe section 271(f). As shown above, the courts consistently held that software programs can be a component of patented inventions long before Congress enacted section 271(f). As a matter of law, Congress is presumed to have known of this judicial authority when it included the language "component of a patented invention" in section 271(f). *See Miles v. Apex Marine Corp.*, 498 U.S. 19, 32 (1990) ("We assume that Congress is aware of existing law when it passes legislation."). In light of this authority, it would have been strange if software were *not* covered by section 271(f).

Moreover, because Congress did not specifically define the word "component," the Federal Circuit appropriately

gave the term its ordinary, contemporary and common meaning. *Diehr*, 450 U.S. at 182. Nothing in the ordinary meaning of "component" limits the term to exclude software. *See, e.g.*, American Heritage Dictionary 302 (2d coll. ed. 1991) (defining "component" as "part of a mechanical or electrical complex"); Microsoft Computer Dictionary 116 (5th ed. 2002) (defining "component" as a "discrete part of a larger system or structure" and an "individual modular software routine that has been compiled and dynamically linked, and is ready to use with other components or programs"). And with respect to software in particular, it is ordinary usage of the courts, the Patent Office and the industry to refer to software as a "component" of a computer system. *See, e.g., Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1351 (Fed. Cir. 2001) (patent claim describes "computers" and their "software components"); *Response of Carolina, Inc. v. Leasco Response, Inc.*, 537 F.2d 1307, 1326 (5th Cir. 1976) ("The final component of the computer system is the application software."); MPEP § 2106.01 at 2100-24 (discussing elements "at least partially comprised of a computer software component"); *id.* § 2106.02 at 2100-25 (discussing "systems which include a computer as well as other hardware and/or software components").

Ironically, even Microsoft's directions for using the golden master disks refer to software as "components" to be installed during computer assembly. Ct. App. JA 1677, 1681, 1712. Indeed, Petitioner itself has obtained numerous patents that include software as a "component" of the invention. *See, e.g.*, U.S. Patent No. 6,738,773 col.5 ll.43-47 (filed May 1, 2000) (Ct. App. JA 1838); U.S. Patent No. 6,727,917 col.3 ll.7-14 (filed May 4, 2000) (Ct. App. JA 1851); U.S. Patent No. 6,725,262 col.5 ll.23-28 (filed Apr. 27, 2000) (Ct. App. JA 1863).

This Court has "more than once cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed." *Diehr*, 450 U.S. at 182 (quoting *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980) and *United States v. Dubilier Condenser Corp.*, 289 U.S. 178, 199 (1933)). There is simply nothing in the language of section 271(f) that can support excluding software from the definition of "component." In fact, there is nothing in the statute that suggests Congress intended to exclude any type of component whatsoever. To the contrary, subsection (f)(2) explicitly states that "any" component is covered by the statute. The use of the comprehensive term "any" reflects Congress's intent not to place any restrictions on the types of components subject to the statute. *See Chakrabarty*, 447 U.S. at 308 ("In choosing such expansive terms as 'manufacture' and 'composition of matter,' modified by the comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope.").

Nor is there anything in the legislative history suggesting that software—or any other part of a special purpose machine—would be excluded from the definition of "component" or from the purview of the statute. To the contrary, the legislative history demonstrates Congress's intent to protect all patent owners by *completely* closing the "loophole" in section 271 recognized by *Deepsouth*. S. Rep. No. 98-663, at 2-3 (1984); 130 Cong. Rec. H28,069 (daily ed. Oct. 1, 1984). Congress emphasized that section 271(f) was needed to make the patent system "responsive to the challenges of a changing world." 130 Cong. Rec. H28,069.

b. Petitioner argues otherwise by mistakenly treating software as nothing more than "intangible information" or "design information." Pet. at 13-22. This is not a novel argument; it is one the courts have repeatedly rejected. *See,*

e.g., *Southwest Software*, 226 F.3d at 1283, 1288; *In re Alappat*, 33 F.3d at 1545 (citing *Diehr*, 450 U.S. at 187); *In re Lowry*, 32 F.3d at 1583; *In re Bernhart*, 417 F.2d 1395. Moreover, the software industry—including Microsoft—clearly understands that software is not "information." Information is "[t]he meaning of data as it is intended to be interpreted by people. Data consists of facts, which become information when they are seen in context and convey meaning to people. Computers process data without any understanding of what the data represents." Microsoft Computer Dictionary 271. Software, on the other hand, is "computer programs; instructions *that make hardware work*." *Id.* at 489 (emphasis added).

By contrast, instructions to people about how to manufacture a product (Pet. at 17-18, citing *Pellegrini*); the design information about a car (Pet. at 15); a mask for fabricating semiconductor circuits (Pet. at 21); and a tire's tread design (*id.*) are very different. The appropriate limiting principle in the statute is that the "component" is part "of [the] patented invention" being assembled. Petitioner's "examples" are not functional parts incorporated in devices being manufactured and are, therefore, irrelevant.

Petitioner's argument also cannot be reconciled with its admission to the district court that Microsoft would be liable under section 271(f) if it exported a separate disk containing the Windows software for each computer to be assembled overseas, rather than supplying a limited number of golden master versions. Pet. App. 36a n.7. Through that admission, Microsoft necessarily acknowledged both that software can be a component of a patented invention supplied from the United States under section 271(f), and that software is still a component when it is transferred from a disk to a computer hard drive to assemble the special purpose machine.

2. The Federal Circuit Properly Construed "Supplied" to Include the Supply of Software Abroad.

a. The Federal Circuit also properly construed the term "supplied" consistent with its ordinary, contemporary and common meaning. The ordinary meaning of "supply" is "[t]o make available for use; provide;" "[t]o furnish or equip with." American Heritage Dictionary 1222 (2d coll. ed. 1991). When it comes to the ordinary meaning of "supplying" software, this includes providing or furnishing the software *for installation on a computer*. *See, e.g., Micro Chem. Inc. v. Lextron Inc.*, 317 F.3d 1387, 1389 (Fed. Cir. 2003) (stating that defendant "supplies ... software" as part of computerized medical record systems); *Info. Comm. Corp. v. Unisys Corp.*, 181 F.3d 629, 631 (5th Cir. 1999) (explaining that as joint-creators of public-safety computer systems, plaintiff "created and supplied the software applications," while defendant supplied the computer hardware); *C.L. Maddox, Inc. v. Benham Group, Inc.*, 88 F.3d 592, 597 (8th Cir. 1996) (referring to an undependable computer system that had numerous deficiencies in the software "supplied by" a defendant). Even Petitioner's own patents use "supply" with this same meaning. U.S. Patent No. 5,548,759 col.3 ll.31-41 (filed Jan. 11, 1996) (explaining that a manufacturer "supplies software" on a disk for installing the application program on the computer); U.S. Patent No. 6,000,832 col.14 ll.45-49 (filed Sep. 24, 1997) (claiming as part of a method claim the step of "supplying" software code to the customer).

Although the replication of the accused Windows software occurs overseas, the courts have correctly recognized that the software is nevertheless supplied from the United States. The Windows software was designed, written, debugged, tested and manufactured entirely within the United States.

Microsoft stipulated that it exports those software components from the United States to foreign computer manufacturers with the intent that the manufacturers install an exact copy of the software onto foreign-assembled computers. Pet. App. 45a-45b. The very same zeros and ones created in the U.S. by Microsoft programmers are installed on the foreign computers. It is these zeros and ones that cause the foreign-assembled machines to practice AT&T's patented speech compression technology, just as with computers assembled in the U.S. In other words, the software that makes the computers "new and useful" was created domestically; it was not of foreign origin.[3] This is exactly the type of domestic activity Congress intended to cover when it enacted section 271(f).

b. Petitioner's reading of "supplied" would write the clause "in a manner that would infringe the patent if such combination occurred within the United States" out of the statute. That clause implements Congress's intent to treat the exportation of components the same as domestic "making" and "selling" of infringing devices. *See, e.g.*, S. Rep. No. 98-663, at 3 (1984) ("The bill simply amends the patent law so that when components are supplied for assembly abroad to circumvent a patent, *the situation will be treated the same* as when the invention is 'made' or 'sold' in the United States.") (emphasis added). Microsoft stipulated that it infringed the '580 patent in the United States, in part by supplying golden

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[3] Judge Rader dissented below from the majority's construction of "supplied." In his view, copying is separate from supplying. But his dissent cannot be reconciled with the opinion he authored in *Eolas*, where the panel unanimously affirmed a judgment under section 271(f) on stipulated facts identical to those here (exporting golden masters of Windows software *with the intent that it be replicated abroad*).

masters to domestic computer manufacturers with the intent that they use the disks to assemble infringing computers. *See, e.g.*, Ct. App. JA 1671-72. But Petitioner argues that the very same assembly by foreign computer manufacturers should not be covered by section 271(f). In both instances Microsoft's conduct and intent are the same; the only difference is the location of the assembly. Petitioner is therefore asking this Court to treat golden masters sent to foreign OEMs *differently* from domestic golden masters, even though Microsoft intended that all golden masters be used to assemble AT&T's patented speech processor. Such a reading of the statute would violate the "cardinal principle of statutory construction" that each word should be given meaning. *Bennett v. Spear*, 520 U.S. 154, 173 (1997).

c. Microsoft's arguments about the meaning of "components" and "supplied" are undermined by its own prior successful arguments in at least two other contexts. First, in *Microsoft Corp. v. Commissioner*, 311 F.3d 1178 (9th Cir. 2002), Microsoft argued that it was entitled to tax deductions under 26 U.S.C. § 927(a)(2)(B) for all foreign sales of software replicated abroad from Microsoft's golden masters, claiming that such copies were "export property" under the statute. The Ninth Circuit, while recognizing that purely "intangible intellectual property" was not "export property," agreed with Microsoft that all copies created from the software embodied on the exported golden master were export property, thereby allowing Microsoft over $31 million in deductions for 1990 and 1991. *Id.* at 1182, 1185, 1189. Second, in the American Jobs Creation Act of 2004, Pub. L. No. 108-357, 118 Stat. 1418 (2004), software is classified as a manufactured good. The bill was originally intended to protect more traditional manufacturing companies, but as a result of Microsoft's lobbying efforts, the definition of manufactured goods was expanded to include computer

software. A.B.A. Sec. Intellectual Property L., *A Section White Paper: Agenda for 21st Century Patent Reform* 52-55 (Sept. 16, 2005) (explaining the ABA Intellectual Property Law Section's opposition to the proposed repeal or amendment of section 271(f)) (hereinafter "ABA White Paper"). If computer software is deemed a manufactured good and export property and afforded the protections of a manufactured good and export property in other areas of the law, then it should not be considered an intangible item manufactured abroad for purposes of the patent law. *See id.* Such an interpretation would subvert the protections of U.S. patents.

The Federal Circuit's construction of section 271(f) is in complete harmony with long standing patent case law and the language and intent of Congress in enacting the statute. Microsoft's strained interpretations of "component" and "supplied," on the other hand, would create special treatment for software—another *Deepsouth* "loophole"—that would discriminate against owners of software-related inventions. Certiorari cannot be justified on this basis.

3. The Federal Circuit's Decision Does Not Expand the Extraterritorial Reach of U.S. Patent Laws.

Microsoft erroneously contends that the Federal Circuit's decision expands the extraterritorial reach of U.S. patent laws and subjects foreign manufacturers to the requirements of U.S. law. *See* Pet. at 22-29. To the contrary, the Federal Circuit appropriately focused on Microsoft's activities in the United States. The court affirmed the judgment of infringement under section 271(f) based on *Microsoft's* supply from the United States of the accused software, and *Microsoft's* intent that it be copied and combined with

computer hardware abroad. *See* Pet. App. 6a ("sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies"); *see also Eolas*, 399 F.3d at 1339. This is consistent with the statutory language ("Whoever without authority supplies or causes to be supplied in or from the United States . . . in such a manner as to actively induce the combination") and prior precedent. *See, e.g.*, 35 U.S.C. § 271(f)(1); *Waymark Corp. v. Porta Sys. Corp.*, 245 F.3d 1364, 1367-68 (Fed. Cir. 2001) (actual assembly of the infringing product is irrelevant to section 271(f) infringement; statute requires only intent by the supplier that the exported component(s) be combined) (Rader, J.). The statute was specifically intended to reach the activities of domestic suppliers, and it was properly applied below.

Petitioner's extraterritoriality argument is a red-herring. Years before the Federal Circuit decided *Eolas* or *AT&T*, the court defined the limits of section 271(f) in order to avoid "the appearance of 'giving extraterritorial effect to United States patent protection.'" *Waymark*, 245 F.3d at 1368 (quoting *Paper Converting Mach. Co. v. Magna-Graphics Corp.*, 745 F.2d 11, 17 (Fed. Cir. 1984)). Relying on the language and legislative history of the statute, the *Waymark* court held that liability does not require proof of an actual combination of the components abroad, but only a showing that the infringer shipped them from the United States with the intent that they be combined. *Id.* Thus, section 271(f) liability is not "predicated [on] acts wholly done in a foreign country" or on "efforts to practice a patent invention outside the territorial jurisdiction of the United States" (Pet. at 14), but on the *domestic* actor exporting the components abroad. *See id.* In both *Eolas* and this case, that domestic actor was Microsoft. It was Microsoft—not the foreign computer manufacturers—that wrote, compiled, tested, debugged, and

created the infringing software, and exported that software with the intent that it be installed on computers abroad in a manner that Microsoft admits infringes when done in the United States. The Federal Circuit appropriately applied the statute to those activities.

4. Congress Recently Rejected Proposals to Limit Section 271(f) as Petitioner Requests.

Recent legislative activity also suggests that the Federal Circuit properly construed and captured Congress's intent in section 271(f). Leading up to the introduction of the Patent Reform Act of 2005, H.R. 2795, 109th Cong. (2005), Congress considered proposals either to repeal section 271(f) or to amend it to limit its application only to "tangible" components that are "physically" combined with other "tangible" components. *See* Staff of H. Comm. on the Judiciary, 109th Cong., Patent Act of 2005 § 10 (Comm. Print 2005); *Patent Quality and Improvement: Hearing Before the Subcomm. on Courts, the Internet and Intellectual Property of the H. Comm. on the Judiciary*, 109th Cong. 23 (2005) (prepared statement of Richard J. Lutton, Jr., on behalf of the Business Software Alliance in support of repealing section 271(f)); *see also id.* at 143-44; ABA White Paper at 52-55. In considering those proposals, the lower courts' decisions in *AT&T* and *Eolas* were explicitly discussed. *See, e.g.*, *Patent Quality and Improvement Hearing* at 14, 23; ABA White Paper at 53. The proposals to repeal or limit section 271(f) were nevertheless rejected. *See* H.R. 2795. Congress's decision to leave the provision intact suggests that Congress has ratified the Federal Circuit's interpretation. *See Herman*, 459 U.S. at 385-86.

The Federal Circuit correctly construed section 271(f) consistent with its plain meaning, the legislative history and

binding patent-law precedent. The exercise of the Court's discretionary jurisdiction is accordingly unnecessary.

IV. The Judgment Below Is Also Based on Section 271(f)(2), an Alternate Ground That Petitioner Elected to Exclude from Its Questions Presented.

The judgment below was also based on section 271(f)(2), which Microsoft has not asked this Court to review. Microsoft's Petition should therefore also be denied because Microsoft presents an incomplete case for review. *See* Sup. Ct. R. 15.2 (requiring Respondent to raise objections to the questions presented).

AT&T alleged that Microsoft infringed under section 271(f), i.e., including both (f)(1) and (f)(2). *See* Pet. App. 24a, 25a-27a.[4] The district court entered judgment against

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[4] Title 35 U.S.C. § 271(f) provides in its entirety:

> **§ 271. Infringement of patent.**
>
> **(1)** Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
>
> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial

Microsoft, and the Federal Circuit affirmed the judgment, again under both 271(f)(1) and (f)(2). *See* Pet. App. 5a, 11a, 26a-27a, 38a, 42-43a, & 45a-47a. But in its Petition to this Court, Microsoft has presented questions only under section 271(f)(1), and has cited only section 271(f)(1) as the statutory provision involved. Supreme Court Rule 14.1(a) requires the petition to contain the "questions presented for review," in order to provide the respondent with sufficient notice and to assist the Court in "selecting the cases in which certiorari will be granted." *Yee v. Escondido*, 503 U.S. 519, 535-36 (1992). Although Microsoft included both (f)(1) and (f)(2) as part of the question presented and statutory provision involved in its petition in *Eolas*, Microsoft elected here to exclude (f)(2). Because Petitioner presents only questions under section 271(f)(1), and does not seek review of section 271(f)(2), section 271(f)(2) is an alternative ground for upholding the judgment below. *See, e.g.*, *Mills v. Rogers*, 457 U.S. 291, 305 (1982) ("review of one basis for a decision supported by another basis not subject to examination would represent 'an expression of abstract opinion'"); *see also Blum v. Bacon*, 457 U.S. 132, 137 n.5 (1982).

Nor can Petitioner claim that a question under section 271(f)(2) is "subsidiary" to and "fairly included" within its questions presented under section 271(f)(1). *See* Sup. Ct. R. 14.1(a). It only cites (f)(2) twice, once as a "see also" supporting cite (Pet. at 15) and once as providing a confirming use of the term "component" (Pet. at 17). In

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noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

addition, although sections (f)(1) and (f)(2) both contain the term "component" and the clause "supplies or causes to be supplied," the two sections otherwise have materially different texts, and differ in their operation and effect. For example, section (f)(1) is directed to active inducement not implicated in section (f)(2); similarly, the components in (f)(2) are limited to those that are "especially made or especially adapted for use in the invention and not a staple article or commodity of commerce," a restriction not found in (f)(1). Because no 271(f)(2) issue is set out or fairly included in the Petition, there is a "heavy presumption against" the Court's consideration of any issue under that section. *See Izumi Seimitsu Kogyo Kabushiki Kaisha v. U.S. Phillips Corp.*, 510 U.S. 27, 32 (1993). By denying certiorari, the Court will avoid the dilemma of deciding whether to follow the presumption and thereby hear only a partial case, or to override the presumption and thus reach out to hear questions that have not been presented.

V. Petitioner Misstates the Impact of the Decision Below.

Microsoft tries to paint a doomsday picture for American software companies if the lower courts' interpretation of section 271(f) stands. Petitioner claims that section 271(f) will expose them to "crippling" liability and destroy their "right" to "compete with an American patent holder in foreign markets." Pet. at 11. Microsoft alleges that as a result these companies will move their research and development facilities outside of the United States. Pet. at 11-12. This is nothing more than alarmism posing as advocacy. The only way section 271(f) has any impact whatsoever on a defendant in the U.S. software industry—or any other industry for that matter—is if that defendant has misappropriated another's patented technology. Stripped of its rhetoric, the premise of Petitioner's policy argument is

therefore that American software companies can compete abroad only if they are permitted to expropriate and export another's patented innovations. This attitude not only is self-defeating, it is wrong. Congress's Constitutional authority is to protect the rights of U.S. inventors, not U.S. infringers. *See* U.S. Const. art. I, § 8.

Petitioner's repeated invocation of the "right of American companies to compete with an American patent holder in foreign markets" also rings hollow. *See, e.g.*, Pet. at 11 (quoting *Deepsouth*, 406 U.S. at 531). There can be no question that, in closing the "loophole" recognized by *Deepsouth*, Congress explicitly concluded that the right to compete with an American patent holder in foreign markets does *not* include the right to export components of the patent holder's invention for assembly abroad. 130 Cong. Rec. H28,069; S. Rep. No. 98-663, at 2-3. Furthermore, Petitioner's warnings about software manufacturing fleeing overseas are overblown. Pet. at 12. It is clear from the *Microsoft v. Commissioner* case and the American Jobs Creation Act of 2004 that Microsoft receives significant financial benefits for keeping its manufacturing in the United States. 311 F.3d at 1182; ABA White Paper at 55.

The range of inventions containing software or operating under software control is astounding: automobiles, telephones, televisions, refrigerators, washers, digital watches, and even new "smart goods" such as light switches, electrical outlets and shower faucets now rely on software for some portion of their operation. The variety of new computer-related products available to consumers is also impressive, including cell phones, handheld computers, digital video recorders, digital cameras and camcorders, vehicle navigation, and so forth. It is irrational to contend that Congress would have designed section 271(f) to exclude such

technology from the scope of the statute. To the contrary, the statute and legislative history make clear that Congress intended to reverse *Deepsouth* for all inventors, both as a matter of basic fairness and to stimulate all areas of the economy. Petitioner's strained interpretation of section 271(f) would undermine and harm American businesses, and should be rejected.

CONCLUSION

For the foregoing reasons, the Petition for writ of certiorari should be denied.

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Petition For A Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

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RULE 29.6 STATEMENT

The corporate disclosure statement included in the petition for a writ of certiorari remains accurate.

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REPLY BRIEF FOR PETITIONER

Nowhere in its brief in opposition does respondent dispute that the decision below "extended" the substantive reach of Section 271(f). *Union Carbide Chems. & Plastics Tech. Corp. v. Shell Oil Co.*, 434 F.3d 1357, 1358 (Fed. Cir. 2006) (Lourie, J., dissenting from denial of reh'g en banc). Far from it, respondent applauds and embraces this extension, which the Federal Circuit deemed necessary to ensure that U.S. patent protections "remain effective" in the digital age. *Id.*; Pet. App. 10a. That holding and its underlying rationale conflict intractably with two central aspects of this Court's patent jurisprudence.

First, by extending the ambit of Section 271(f) to sweep in foreign-replicated software, the Federal Circuit necessarily expanded the extraterritorial reach of U.S. patent law. In doing so, the Federal Circuit disregarded both the well-settled rule that the patent laws are "not intended to[] operate beyond the limits of the United States," *Brown v. Duchesne*, 60 U.S. (19 How.) 183, 195 (1857), and its obligation—incumbent on all courts construing federal statutes—to adopt *any* statutory construction that reasonably avoids extraterritorial application, *see F. Hoffmann-La Roche Ltd. v. Empagran, S.A.*, 542 U.S. 155, 174 (2004). Second, as this Court recognized in *Parker v. Flook*, 437 U.S. 584 (1978), it is the domain of Congress—and emphatically not the role of the courts—to ensure that our patent laws "remain effective." *Id.* at 595-96. Tellingly, the brief in opposition does not even cite—let alone, distinguish—*Brown*, *Empagran*, or *Parker*. The manifest conflict with the decisions of this Court is itself a sufficient basis for certiorari.

As amply demonstrated by the *amicus curiae* brief of the Software & Information Industry Association ("SIIA"), the questions presented have grave significance for U.S. high-technology companies. It is not a sufficient response for respondent simply to dismiss these concerns as "doomsday" "alarmism." Opp. 25. One need look no further than the *Eo-*

las case—a half-billion dollar verdict, $330 million of which was premised upon Section 271(f)(1)—to see the impact of the Federal Circuit's unwarranted extension of that statute. *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005).

The brief in opposition itself demonstrates that the questions presented, though recent, are recurring. Opp. 8-9 (citing cases); *see also* SIIA Br. 2 (describing the "increasingly common" "case of the 'golden master'"). Respondent's arguments against review are insubstantial. Certiorari is therefore warranted and, indeed, urgently needed.

A. The Importance Of The Questions Presented Cannot Be Overstated.

As detailed in the petition (at 22-29), the questions presented are exceptionally important for two related reasons:

First, by expanding the extraterritorial application of U.S. patent law, the decision below portends to reduce significantly the need for inventors to obtain patents outside the United States. The decision below thus threatens to disrupt the patent systems of foreign nations and create substantial international discord. *See Brown*, 60 U.S. (19 How.) at 197. *Second*, the Federal Circuit's recent extension of Section 271(f) imposes crushing liability on U.S. software and high-technology firms for foreign conduct that, until recently, was understood widely and justifiably not to implicate U.S. patent law. *Compare Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1118 (Fed. Cir. 2004) (holding that Section 271(f) did not reach circuit chips manufactured overseas based on U.S.-supplied instructions), *with Eolas Techs. Inc.*, 399 F.3d 1325 (awarding more than $330 million in damages based upon foreign-duplicated software). Respondent is quick to dismiss both concerns, but its arguments cannot withstand scrutiny.

1. Notwithstanding the undisputed fact that Section 271(f) liability in this case was predicated upon *foreign*-replicated software that was installed in *foreign*-assembled computers for sale to *foreign* consumers, respondent con-

tends that the decision below did not involve an extraterritorial application of the U.S. patent laws. Opp. 20-22. Respondent argues that the Federal Circuit instead reached only Microsoft's activities as a "domestic supplier[]." Opp. 21. But this argument can be accepted only if one first accepts respondent's merits contention that copying a component overseas is the same, for statutory purposes, as supplying that component from the United States. As detailed *infra* (at 8-10), sound principles of statutory interpretation and common sense dictate the opposite conclusion.

2. Respondent cannot deny the fact that the Federal Circuit's extension of Section 271(f) threatens to impose massive liability on U.S. software companies. (Respondent is, after all, among the group of patent holders aggressively seeking its imposition.) Respondent instead argues that such liability will have no perceptible effect on U.S. software and high-tech firms. Opp. 25. But even the district court recognized that its extension of Section 271(f) would have "profound ramifications" for U.S. software companies. Pet. App. 24a. The notion that half-billion dollar verdicts like that in *Eolas* will have no effect on the business practices of potential defendants is fanciful, and the *amicus curiae* brief filed by the SIIA—a trade association comprised of some of the country's largest software manufacturers, including Novell, Oracle, and Sun Microsystems—strongly refutes respondent's self-serving intuition. *See* SIIA Br. 16 (the "daunting threat" of "unwarranted international liability" "creates disincentives for future investment in America's high-tech industries"). As Justice Scalia recently acknowledged, such "enormous potential liability, which turns on a question of federal statutory interpretation, is a strong factor in deciding whether to grant certiorari." *Fid. Fed. Bank & Trust v. Kehoe*, No. 05-919, 547 U.S. _ (slip op. at 1-2) (U.S. Mar. 27, 2006) (Scalia, J., concurring in the denial of certiorari).

Respondent's more fundamental argument—that any such crippling liability could be avoided if companies like Microsoft did not "expropriate and export another's patented innovations" (Opp. 26)—only illustrates the depth of respon-

dent's disregard for the territorial limitations of U.S. patent law. U.S. patents are not supranational monopolies that transcend established notions of sovereignty and international comity. A U.S. firm thus does not "expropriate" a patented invention when it practices that invention outside the territorial jurisdiction of the United States. If an inventor wishes to prevent such "expropriat[ion]" in foreign nations, it must "seek [protection] abroad through patents secured in countries where [its] goods are being used" (*Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 531 (1972))—a measure that respondent here never bothered to undertake.

3. Attempting to obscure the importance of the questions presented, respondent begins its brief in opposition by noting that this Court declined to review the same questions in *Eolas*. 126 S. Ct. 568 (2005). As noted in the petition (at 29), however, that case came to this Court in an interlocutory posture, and therefore was not a strong candidate for review. This case, in contrast, is final in all respects and thus does not share *Eolas*'s obvious vehicular flaw.

Moreover, respondent's reliance on the absence of a circuit split is passing strange. Opp. 8. As respondent itself notes, the Federal Circuit has national jurisdiction over patent appeals. *Id.* Because that fact gives the decision below national application, it *enhances* rather than detracts from the importance of the questions presented.[1]

B. This Case Is An Ideal Vehicle For Review Of Those Questions.

Desperate to contrive a vehicle problem in Microsoft's case for review, respondent contends that Section 271(f)(2) is an alternative basis for the decision below and Microsoft has

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[1] And similarly, respondent's effort to reconcile the decision below with past Federal Circuit decisions is authoritatively debunked by Judge Lourie's candid acknowledgment that recent circuit decisions—including his majority opinion in the decision below—have "extended" Section 271(f). *Union Carbide Chems. & Plastics Tech. Corp.*, 434 F.3d at 1358 (Lourie, J., dissenting from denial of reh'g en banc).

not sought review of that supposed alternative holding. Opp. 23-25. This argument has no basis in fact or law.

Respondent has *never* once—not in its complaint, not in its briefs below, not even in its opposition to Microsoft's motion for extension of time within which to file a petition for certiorari—suggested that Microsoft was liable under Section 271(f)(2). Nor did the courts below, and with good reason. That provision is obviously inapplicable to the facts of this case. Section 271(f)(2) requires that the "component" "supplied" from the United States be "especially made or especially adapted for use" in the patented invention. 35 U.S.C. § 271(f)(2). Under this Court's decisions, only a component that is specifically designed to fit an invention's parameters (and thus lacks any substantial noninfringing use) is "especially made." *See Aro Mfg. Co. v. Convertible Top Replacement Co.*, 377 U.S. 476, 488 n.7 (1964) (holding that fabric replacements for patented Ford convertible tops were "especially made" for an infringing purpose where they were "specially designed for the Ford convertibles [and] would not . . . fit the top-structures of any other cars"). The notion that Microsoft Windows—which has literally hundreds of uses beyond speech processing—was "especially made or especially adapted for use" in respondent's speech codec invention fails even the straight-face test. *See Hodosh v. Block Drug Co.*, 833 F.2d 1575, 1578 (Fed. Cir. 1987) (explaining that the substantial noninfringing use inquiry focuses on all of a device's functions, not just on the one capable of infringing the patent at issue). Not surprisingly, then, respondent did not allege, the district court did not find, and Microsoft did not stipulate that Windows was "especially made" for use in respondent's patented invention. In the absence of such a finding, there could be no liability under Section 271(f)(2).[2]

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[2] Respondent's assertion is yet further belied by its reliance on the *Eolas* decision. Respondent is at pains to demonstrate that "the operative facts and legal conclusions relating to section 271(f) are *identical* in both decisions." Opp. 8. *Eolas*, however, was decided exclusively under Section 271(f)(1). *See* 399 F.3d at 1341.

Moreover, even if respondent had pressed a Section 271(f)(2) claim below—and it most certainly did not—the statutory terms at issue in this case—"component" and "supplied"—are found in both Section 271(f)(1) and Section 271(f)(2). Any authoritative construction of those terms as used in Section 271(f)(1) would apply perforce to Section 271(f)(2). *See Mertens v. Hewitt Assocs.*, 508 U.S. 248, 260 (1993) ("language used in one portion of a statute should be deemed to have the same meaning as the same language used elsewhere in the statute") (citations omitted). Reversal (or affirmance) of the Federal Circuit's construction of Section 271(f)(1) thus would necessarily upset (or affirm) any purported alternative holding under Section 271(f)(2). The interpretation of the critical terms in Section 271(f)(2) is thus fairly included within the questions presented concerning the proper construction of the identical terms in Section 271(f)(1). *See United States v. Zolin*, 491 U.S. 554, 564 n.8 (1989) (a question is "fairly included" where the "answer to the question would follow inexorably from [the Court's] discussion" of other issues).

C. Respondent's Defense Of The Merits Of The Decision Below Is Unpersuasive.

Respondent devotes the bulk of its opposition brief to defending the merits of the Federal Circuit's decision—a consideration, at most, only tangentially relevant to the exercise of this Court's certiorari jurisdiction. Respondent's expansive reading of Section 271(f), however, cannot be reconciled with the statute's plain meaning or legislative history, or with fundamental canons of statutory construction.

1. Respondent argues that because software code is an essential element of a programmed computer invention, it "logically follows" that software code "must be a component of that patented invention." Opp. 13. Even if the ordinary meaning of the term "component" could sweep in intangible aspects of physical products—and it cannot, *see* Pet. 15-16—respondent *never* confronts Microsoft's argument that the term "component," as it is used in Section 271(f), is limited

to an invention's physical parts because only physical parts may be "combined," *i.e.*, assembled (Opp. 16, 19), to form a patented invention.[3] As noted in the petition (at 16-17), both the circumstances leading to Section 271(f)'s enactment and use of the term "component" in Section 271's other subsections strongly suggest that the term is limited to an invention's *physical* parts. The syntactical awkwardness of respondent's contention that Microsoft "use[s] the [software] disks to assemble infringing computers," Opp. 19, powerfully illustrates the weakness of respondent's contrary position. One does not *assemble* software code and hardware to build a computer.[4]

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[3] To the extent that respondent argues that software code is not "intangible and unpatentable," Opp. 12, it makes the same fundamental mistake as the Federal Circuit, confusing *intangible* software code with the *tangible* media on which the code is inscribed. The cases relied upon by respondent demonstrate only that *physical* items, such as computers, can be patented when they are altered by software code in a manner that is new and useful. *See, e.g., In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc). By itself, *i.e.*, divorced from any tangible medium, software code is not patentable. *See* 35 U.S.C. § 101; Pet. 4-5. This distinction between software code and its storage media is reinforced by *Microsoft Corp. v. Commissioner*, 311 F.3d 1178 (9th Cir. 2002), a decision that respondent mistakenly relies upon for support. *See id.* at 1187-88 (holding that software disks are "export property" within the meaning of 26 U.S.C. § 927(a)(2)(B) because "diskettes . . . can embody software code," and "are similar to films, tapes, and records, because [they] all are media on which machine-readable copyrighted material can be stored").

[4] Respondent's assertion that Microsoft admitted in the district court that software is a "component[] of a patented invention" is profoundly flawed. Judicial admissions apply only to matters of fact, not to questions of law, and Microsoft therefore could not possibly be bound by its extemporaneous statement regarding the proper legal interpretation of Section 271(f). *See, e.g., MacDonald v. Gen. Motors Corp.*, 110 F.3d 337, 341 (6th Cir. 1997). Moreover, Microsoft's equivocal acknowledgment that, under certain conditions, there "*could be* 271(f) liability" if the master disks sent overseas were themselves installed on computers (Pet. App. 36a (citing Tr. at 16)) does not constitute the type of deliberate, clear, and unambiguous statement that is a prerequisite to the finding of a judicial admission. *See Oscanyan v. Arms Co.*, 103 U.S. 261, 263 (1880).

Respondent seeks to limit the consequences of the Federal Circuit's expansive definition of "component," arguing that its construction does not sweep in all "'intangible information' or 'design information,'" but rather encompasses only those intangible "instructions" that are "functional parts" of a finished invention. Opp. 16. Thus, respondent contends, while the export of software code (and presumably, the pattern of perforations in a player piano music roll, and the genetic sequence of a cell line—examples that respondent makes no effort to distinguish) could trigger Section 271(f) liability, the export of semiconductor circuit designs, tire tread designs, or other design information would not give rise to Section 271(f) liability. Respondent's dichotomy of functional instructions and design information, however, is false. As noted in the petition (at 21), the designs of tire treads and semiconductors *are* functional inasmuch as they give a tire or a semiconductor *all* of its new and useful functionality. If respondent is prepared to concede that a tire's tread design is not a component of a tire, then it should likewise admit that software code is not a component—a "functional part[]"—of a patented programmed computer. Just as a tire's tread design arranges rubber in a certain pattern to achieve a certain functionality, software code arranges a computer's circuits in a particular pattern to achieve a certain functionality; there is no meaningful distinction to be drawn between the two. And even if such a distinction could be maintained, the decision to extend Section 271(f) to embrace the export of "functional" "instructions" was Congress's—and surely not the Federal Circuit's—to make. *See Parker*, 437 U.S. at 595-96.

2. Respondent's defense of the Federal Circuit's construction of "supplie[d] . . . from the United States" is even less persuasive. Respondent acknowledges that "replication of the accused Windows software occurs overseas," *i.e.*, that the software code actually installed on foreign computers is manufactured abroad—not in the United States. Opp. 17. Respondent nevertheless argues that "[w]hen it comes to the ordinary meaning of supplying software, this includes providing . . . the software for installation on a computer" (Opp.

17)—in other words, "copying is subsumed in the act of supplying." Pet. App. 7a. But respondent suggests no reason why software code should be treated differently than physical "components." If, for example, a U.S.-supplied microprocessor were reverse-engineered and replicated overseas, the resulting foreign-made copies would not be "supplie[d] . . . from the United States"—even if what made the microprocessor "new and useful" lacked a "foreign origin." Opp. 18. Respondent's argument thus distills to an assertion that software code is *sui generis* because its intangibility makes it easy and inexpensive to copy. But such disparate treatment of software code violates the United States' international obligation to "accord[] the same treatment to all forms of invention." *Eolas*, 399 F.3d at 1339.[5]

Respondent further argues that limiting the phrase "supplie[d] . . . from the United States" to components actually shipped from the United States would have the effect of treating "golden masters sent to foreign OEMs *differently* from domestic golden masters." Opp. 19. But the difference in treatment of which respondent complains is the difference between extraterritorial and domestic application of the patent laws and is required by the plain text of Section 271(f). Section 271(b) makes one liable for any act that "induces infringement of a patent," 35 U.S.C. § 271(b), *i.e.*, any act that induces one "within the United States" to "make[] . . . any patented invention." *Id.* § 271(a). By contrast, Section 271(f)(1), which applies extraterritorially, is far more circumscribed, imposing liability only on those who intend to "induce the combination of . . . components," "supplie[d] . . . from the United States," "in a manner that would infringe [a] patent if such combination occurred within the United

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[5] Respondent's suggestion that Congress has, through legislative inaction, somehow ratified this interpretation of Section 271(f) (Opp. 22) is baseless. Often enough this Court has recognized that "congressional inaction lacks persuasive significance" and that "failed legislative proposals are a particularly dangerous ground on which to rest [statutory] interpretation." *United States v. Craft*, 535 U.S. 274, 287 (2002).

States." *Id.* § 271(f)(1). The shipment of a golden master disk from the United States cannot trigger liability under Section 271(f) unless that disk is among the "components" to be "combin[ed]" to form a patented invention. As the parties have stipulated, though, the golden master disk—the *only* "component" supplied by Microsoft from the United States (Pet. App. 47a)—"is never installed on a computer that is then sold." *Id.* 45a.

In seeking to hold Microsoft liable for inducing a combination of components, whether or not those components were actually "supplie[d] . . . from the United States," it is respondent rather than Microsoft that "violates the 'cardinal principle of statutory construction' that each word should be given meaning." Opp. 19 (quoting *Bennett v. Spear*, 520 U.S. 154, 173 (1997)).[6] Such a construction is particularly suspect where its effect, as here, is to broadly enhance U.S. law's extraterritorial reach. *See Empagran*, 542 U.S. at 174.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted.

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[6] Contrary to respondent's contention (Opp. 18), Microsoft's common-sense construction of "supplie[d] . . . from the United States" has no effect whatsoever on Section 271(f)'s requirement that the "combination" of components "infringe the patent if such combination occurred within the United States." *Id.* That element simply limits the statute to those "combination[s]" that are actually the subject of a United States patent.

(1)

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In the Supreme Court of the United States

MICROSOFT CORPORATION, PETITIONER

v.

AT&T CORP.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE UNITED STATES AS AMICUS CURIAE

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QUESTIONS PRESENTED

In certain circumstances, Section 271(f) of the Patent Act prohibits the "suppl[y] * * * from the United States * * * [of] all or a substantial portion of the components of a patented invention * * * in such manner as to actively induce the combination of such components outside of the United States," as well as the "suppl[y] * * * from the United States [of] any component of a patented invention that is especially made or especially adapted for use in the invention." 35 U.S.C. 271(f)(1) and (2). For purposes of that statute, the questions presented are:

1. Whether software object code can be a component of a patented invention; and, if so,

2. Whether copies of software object code are "supplie[d]" from the United States when those copies are created overseas by replicating a separate master version supplied from the United States.

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In the Supreme Court of the United States

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MICROSOFT CORPORATION, PETITIONER

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AT&T CORP.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR THE UNITED STATES AS AMICUS CURIAE

This brief is submitted in response to the order of this Court inviting the Solicitor General to express the views of the United States. In the view of the United States, the petition for a writ of certiorari should be granted.

STATEMENT

Respondent AT&T Corp. brought this patent infringement action against petitioner Microsoft Corp., alleging that computers loaded with petitioner's Windows® operating system infringe respondent's patent related to digitally recorded speech. After petitioner conceded liability as to Windows-based computers manufactured and sold in the United States, the district court held that petitioner was also liable for Windows-based computers manufactured and sold *outside* the United States. The Federal Circuit affirmed.

1. "[W]hoever without authority makes * * * within the United States * * * any patented invention," is generally liable for patent infringement. 35 U.S.C. 271(a). In

Deepsouth Packing Co. v. *Laitram Corp.*, 406 U.S. 518 (1972), this Court held that a company did not violate that provision by manufacturing the component parts of a patented shrimp deveining machine in the United States and then shipping those parts overseas for final assembly. *Id.* at 523-524. The Court explained that "it is not an infringement to make or use a patented product outside of the United States," *id.* at 527, and the patented invention (the shrimp deveining machine) was not made until its components were assembled abroad, *id.* at 528-529.

Congress responded by enacting 35 U.S.C. 271(f), which states:

> (f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
>
> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

2. United States Reissue Patent No. 32,580 (the '580 patent) claims an apparatus for digitally encoding and compressing recorded speech. Respondent brought this action against petitioner in the United States District Court for the Southern District of New York, contending that computers loaded with copies of petitioner's flagship product, the Windows operating system, infringe the '580 patent because Windows incorporates software code for encoding and compressing speech in the manner claimed by the '580 patent. Before Windows has been installed, neither the Windows software nor the computers infringe the '580 patent, standing alone; instead, the patent is infringed by a computer loaded with the Windows software such that it is capable of performing as the patented speech processor. The parties eventually entered into a stipulated judgment in which petitioner conceded that the '580 patent was valid, enforceable, and infringed. See Pet. App. 3a-4a.

The only issue on which the parties failed to reach agreement was petitioner's alleged liability under 35 U.S.C. 271(f) for Windows-based computers manufactured and sold overseas. The relevant facts on that point are undisputed. Petitioner conceives, writes, compiles, tests, and debugs its Windows operating system software in the United States. It then provides the operating system to foreign computer manufacturers in one of several ways. First, petitioner creates a limited number of "golden master disks" on which it stores the machine-readable binary object code for the Windows operating system.[1] In some cases, petitioner ships those golden master disks to foreign

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[1] Software in the form in which it is written and understood by humans is called "source code." To be functional, however, software must be converted (or "compiled") into the binary ones and zeros understood by computers. The resulting machine-readable version of software is called "object code." See Pet. App. 22a n.5.

computer manufacturers, who replicate the object code on the master disks to create separate copies of the code and install those copies on the computers they assemble. In other instances, petitioner ships golden master disks to authorized foreign replicators, who make copies of the object code and ship those copies to foreign computer manufacturers for installation on their computers. Alternatively, petitioner sometimes provides the Windows object code to foreign computer manufacturers and replicators via encrypted electronic transmission. The transmitted code is then decrypted and copied, and the copies are installed on foreign computer products. Pet. App. 45a-46a.

In each case, the computer hardware is manufactured overseas; the Windows operating system is installed overseas from copies of the object code that were created overseas; and the completed systems are sold overseas to overseas end-users. Pet. App. 45a-46a. A golden master disk is "never installed on a computer that is then sold." *Id.* at 45a.

3. After acknowledging that the Section 271(f) issue in this case has "profound ramifications for [petitioner] and other United States software manufacturers," Pet. App. 22a, the district court held petitioner liable for all foreign sales of Windows-based computers, *id.* at 21a-38a. The court held that software can be a "component" for purposes of Section 271(f) because it is "well-established" in other contexts that "software can be a component of a patented invention," *id.* at 30a, and "there is no limitation of the term 'components,' either in the statutory text or in the legislative history, to machines or other structural combinations," *id.* at 31a. The court also held that copies of the object code replicated overseas are supplied from the United States because "the object code is originally manufactured in the United States, and supplied from the United States to for-

eign [companies] with the intention of incorporating such software into foreign-assembled computers." *Id.* at 35a.

In light of the district court's decision, petitioner acquiesced in a stipulated judgment of liability and entered into a settlement with respect to damages, while reserving the right to appeal the district court's ruling on the Section 271(f) issue. Pet. App. 42a-43a.

4. In a divided decision, the court of appeals affirmed. Pet. App. 1a-19a.

a. Relying on its recent decision in *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, cert. denied, 126 S. Ct. 568 (Fed. Cir. 2005), the court of appeals unanimously held that software code may be a component of a patented invention for purposes of Section 271(f). Pet. App. 4a; see *id.* at 11a (Rader, J., dissenting in part). The court reasoned that "software code alone qualifies as an invention eligible for patenting," and Section 271(f)'s text is not limited to "patented 'machines' or patented 'physical structures.'" *Id.* at 4a (quoting *Eolas*, 399 F.3d at 1339).

A majority of the panel further held that copies of software that are created abroad by replicating a master version exported from the United States have been supplied from the United States for purposes of Section 271(f). Pet. App. 4a-11a. On the theory that "[c]opying * * * is part and parcel of software distribution," the court concluded that "for software 'components,' the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." *Id.* at 6a.

The court of appeals expressed concern that a contrary holding would "emasculate § 271(f) for software inventions" because "[i]t is inherent in the nature of software that one can supply only a single disk that may be replicated * * * instead of supplying a separate disk for each copy of the

software to be sold abroad." Pet. App. 6a n.2, 7a. In the court's view, petitioner's position would "permit[] a technical avoidance of the statute by ignoring the advances in a field of technology—and its associated industry practices—that developed after the enactment of § 271(f)." *Id.* at 9a-10a. If Congress's response to *Deepsouth* "is to remain effective," the majority asserted, it must "be interpreted in a manner that is appropriate to the nature of the technology at issue." *Id.* at 10a.

b. Judge Rader dissented. Pet. App. 11a-19a. Although he agreed with the majority that software code can be a component of a patented invention, *id.* at 11a, Judge Rader concluded that the majority erred by conflating copying software with supplying it, *id.* at 11a-13a. That software must be copied to be distributed, he explained, "does not actually distinguish software components from physical components of other patented inventions. The only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport." *Id.* at 14a. The majority's reliance on the relative ease of copying software, he reasoned, is not a relevant distinction under Section 271(f), but instead "ignores this court's case law that refuses to discriminate based on the field of technology." *Ibid.*

Further, Judge Rader warned, the panel imposed "endless liability in the United States under § 271(f) for products manufactured entirely abroad." Pet. App. 11a. Because "[n]othing in § 271(f) or its enacting documents expresses an intent to attach liability to manufacturing activities occurring wholly abroad," *id.* at 16a, Judge Rader explained that respondent's remedy lies in "obtaining and enforcing foreign patents," *id.* at 18a-19a.

DISCUSSION

Although the court of appeals correctly held that software can be a component of a patented invention, it erred in holding that the creation of copies of software overseas, based on a master version provided from the United States, constitutes the supply of those software copies from the United States. The latter holding, which is contrary to the text and history of Section 271(f), improperly extends United States patent law to foreign markets and puts United States software companies at a competitive disadvantage vis-a-vis their foreign competitors in foreign markets. Respondent's remedy lies in obtaining and enforcing foreign patents, not in attempting to extend United States patent law to overseas activities. Because the court of appeals' error has substantial practical importance, the petition for a writ of certiorari should be granted.

A. Software Can Be A Component Of A Patented Invention

By itself, the threshold question presented would not warrant this Court's review. The Federal Circuit correctly rejected petitioner's categorical assertion that software cannot be a component of a patented invention under Section 271(f). See Pet. App. 4a.

1. Because the statute does not define the term "component," that term has its "ordinary or natural meaning." *FDIC* v. *Meyer*, 510 U.S. 471, 476 (1994). A "component" is ordinarily understood to be "a constituent part; element; ingredient." *The Random House Dictionary of the English Language* 419 (2d ed. 1987); see *Webster's New International Dictionary of the English Language* 547 (2d ed. 1958).

Petitioner contends (Pet. 3-5, 12) that software code itself, "uncoupled from any storage medium or computer," is nothing more than disembodied "design information"

that cannot be the subject of a patent. Pet. 3, 12 (citing U.S. Pat. & Trademark Office, *Manual of Patent Examining Procedure* § 2106.IV.B.1(a), at 2100-13 (8th ed. 2001)). Regardless of whether software code is itself patentable, however, software can be a part, element, or ingredient of a patented invention. Three years before Congress enacted Section 271(f), this Court held in *Diamond* v. *Diehr*, 450 U.S. 175 (1981), that an invention is not unpatentable "simply because it uses a * * * computer program, or digital computer." *Id.* at 187; accord *Parker* v. *Flook*, 437 U.S. 584, 590 (1978).

Here, each copy of Windows that is loaded onto a computer is clearly a part, element, or ingredient of the patented invention, and not merely abstract "design information" analogous to the blueprints of a machine. The foreign-made computers at issue here cannot digitally encode and compress speech, and thus do not constitute the "patented invention," unless and until a copy of the software is installed on them. See Pet. App. 3a. Thus, unlike a blueprint that remains on the shelf and is not itself inserted into a computer or other patented invention, the software copy that is actually loaded onto the computers is a part, element, or ingredient of the patented invention. Computer texts commonly describe "software" as being a "component[]" of a computer system. *Dictionary of Computing* 426 (3d ed. 1990); *Encyclopedia of Computer Science* 1599 (Anthony Ralston et al. eds., 4th ed. 2000). The installed Windows code "is not only a component, it is probably the key part of this patented invention." *Eolas*, 399 F.3d at 1339.

2. Petitioner also argues (Pet. 15-17) that software cannot be a "component" of a patented invention because it is "intangible information" rather than a "physical product." But while the concept of the Windows software lacks

physical existence, each copy of the object code that was created overseas and then installed in an allegedly infringing computer overseas unquestionably had physical existence. Software resident in a computer's random-access memory, for instance, has a detectable physical existence in the form of the presence or absence of electrons at different locations on millions of capacitors located on the computer's memory chips. See, *e.g.*, Jeff Tyson & Dave Coustan, *How RAM Works* (visited Sept. 20, 2006) <http://computer.howstuffworks.com/ram.htm>. Similarly, software residing in a computer's hard drive is physically embodied in the varied orientation of particles in the magnetically sensitive coating on the surface of the hard disk platters. See, *e.g.*, Jon L. Jacobi, *How It Works: Hard Drives* (visited Sept. 20, 2006) <http://www.pcworld.com/article/id,18693-page,2/article.html>. Indeed, it is only because the object code has physical existence that the computer's central processing unit is able to detect and implement the software.

To be sure, copies of software stored in a computer's memory or hard drive are not "tangible" in the sense of being detectable by the sense of touch, but nothing in Section 271(f) limits its scope to components of that nature. Petitioner is correct that the components of the shrimp deveining machine at issue in *Deepsouth* were tangible, but Congress did not confine Section 271(f) to the tangible parts of patented inventions any more than it restricted the statute to shrimp deveining machines. By its plain terms, Section 271(f)(1) applies to all "components" of a patented invention, while Section 271(f)(2) applies to "any" component of such an invention—not only tangible components. 35 U.S.C. 271(f)(1) and (2); see *Eolas*, 399 F.3d at 1339; Pet. App. 4a.

Noting that the statute refers to the "combination of * * * components outside the United States," 35 U.S.C. 271(f)(1), petitioner argues (Pet. 16) that intangible software cannot be combined with physical components. Again, however, petitioner's argument reflects a misconception of the nature of the software component of the patented invention. A "combination" is simply a "union of elements." *Deepsouth*, 406 U.S. at 528 (citation omitted). Installing a physical copy of the Windows software object code onto a computer to complete the patented system unites, and thus combines, the software code with the other components so as to "make[]" the invention in a manner that would infringe the patent if done in the United States. 35 U.S.C. 271(a). Nothing in the text of Section 271(f) supports the artificial "tangibility" limitation suggested by petitioner.

B. Transmitting One Copy Of Software Code From The United States Is Not Tantamount To Supplying From The United States The Separate Copies Subsequently Created Overseas

Although the court of appeals correctly held that software can be a component of a patented invention, it erred in holding that the creation of software copies overseas by replication of a master version provided from the United States constitutes the "suppl[y]" of software "from the United States" within the meaning of 35 U.S.C. 271(f). See Pet. App. 4a-11a.

1. Section 271(f) does not prohibit the making of components overseas, the inducement to manufacture components abroad, or the assembly overseas of components that were made overseas. To the contrary, the statute prohibits supplying components "from the United States * * * in such manner as to actively induce the combination *of such components*," *i.e.*, the very components supplied from the United States. 35 U.S.C. 271(f)(1) (emphasis added); see 35

U.S.C. 271(f)(2) (prohibiting the supply from the United States of a component "intending that such component will be combined outside of the United States"). Conduct that merely induces the combination of *foreign-made* components does not violate Section 271(f). Thus, Section 271(f) strikes a balance—it generally prevents companies from manufacturing the components of a patented invention in the United States for assembly overseas, but it leaves them free to manufacture and assemble copies of the *identical* components overseas.

That distinction is rooted not only in the statutory text, but also in Congress's intent to overrule *Deepsouth*. In *Deepsouth*, a manufacturer of shrimp deveining machines sought to avoid infringing a competitor's patent by manufacturing the component parts of the patented machine in the United States and then shipping those parts overseas for final assembly. 406 U.S. at 523-524. If the manufacturer had assembled the machines in the United States, it would have been liable under 35 U.S.C. 271(a) for making a patented invention in the United States. This Court held, however, that the company was not liable because "it is not an infringement to make or use a patented product outside of the United States," 406 U.S. at 527, and the patented invention (the shrimp deveining machine) was not made until its components were actually assembled to form the patented invention, *id.* at 528-529.

Four dissenting Justices argued that the "machine was *made* in the United States," and therefore infringed the patent, because all of the components were manufactured in the United States and "everything was accomplished in this country except putting the pieces together as directed." *Deepsouth*, 406 U.S. at 533 (Blackmun, J., dissenting). The dissenters noted, however, that in their view "[t]he situation, perhaps, would be different were parts, or even only

one vital part, manufactured abroad." *Ibid.* Their concern was protecting against "an infringer who manufactures in the United States." *Id.* at 534 (citation omitted).

When Congress responded by enacting Section 271(f), it agreed with the *Deepsouth* dissenters that the manufacture of component parts in the United States is sometimes sufficiently analogous to making the assembled patented invention in the United States as to warrant liability. See S. Rep. No. 663, 98th Cong., 2d Sess. 2-3 (1984). But it did not take the additional step of prohibiting companies based in this country from competing abroad by either manufacturing abroad or assembling foreign-made components abroad. As the Senate Report explains, "[t]he bill simply amends the patent law so that when components are supplied for assembly abroad to circumvent a patent, the situation will be treated the same as when the invention is 'made' or 'sold' in the United States." *Id.* at 3; see *id.* at 6 (explaining that Section 271(f) prohibits "shipping overseas the components of a product patented in this country so that the assembly of the components will be completed abroad"); 130 Cong. Rec. 28,073 (1984) (statement of Rep. Kastenmeier) (same).

2. The Federal Circuit disregarded that limitation on Section 271(f)'s reach by holding petitioner liable for inducing the combination, outside the United States, of foreign-made computer software copies with foreign-made computer hardware for sale outside the United States.

a. It is undisputed that the golden master disk sent from the United States "is never installed on a computer that is then sold." Pet. App. 45a. Nor does respondent contend that petitioner supplies any other components from the United States. *Id.* at 47a. Because the master copies supplied from the United States are not installed on any of the computers at issue, petitioner has not supplied a compo-

nent of those computers from the United States. As the Federal Circuit has explained in other contexts, "§ 271(f) is clear on its face. It applies only when components of a patent[ed] invention are *physically present* in the United States and then either sold or exported." *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113, 1117 (emphasis added), cert. denied, 543 U.S. 1003 (2004).

The court of appeals assumed that a different rule should apply to software because "for software 'components,' the act of copying is subsumed in the act of 'supplying.'" Pet. App. 6a. That assumption is erroneous. The particular copy of Windows object code installed on a computer overseas has no existence *until* it is created by replication, and a component cannot have been "suppl[ied]" before it even exists—nor can it have been supplied "from" a country in which it was never present. To be sure, creating copies of computer software is a fast and inexpensive process, but that does not justify the linguistic leap necessary to conclude that supplying one copy from the United States also constitutes supplying from the United States whatever new copies may later be made overseas, any more than sending one mold abroad constitutes supplying from the United States as many items as are later made from that mold in a foreign nation. As Judge Rader explained in dissent, "[a]s a matter of logic, one cannot supply one hundred copies * * * without first making one hundred copies." *Id.* at 13a. By concluding that all copies made from the supplied copy "may be *deemed* 'supplied' from the United States," and have "*essentially* been supplied from the United States," the court of appeals all but acknowledged that petitioner had not *actually* supplied from the United States the copies installed in the foreign-made computers

at issue. See *id.* at 4a, 7a (emphases added). That should be the end of the analysis.[2]

b. The court of appeals' contrary holding rests on its assertion that Section 271(f) "should be construed broadly to effectuate its purposes," Pet. App. 9a (citation omitted), in order to ensure that Section 271(f) will "remain effective" in light of "advances in a field of technology * * * that developed after the enactment of § 271(f)," *id.* at 10a. In patent cases, however, this Court has endorsed the opposite rule of construction: "It is our duty to construe the patent statutes as they now read * * *, and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress." *Flook*, 437 U.S. at 596; see *Deepsouth*, 406 U.S. at 531. Congress is, after all, fully aware of the ease with which software can be copied, and at times it has adopted special rules to modify intellectual property rights for computer software and other new technologies. See, *e.g.*, Digital Millennium Copyright Act, 17 U.S.C. 1201 *et seq.* The court of appeals erred by expanding the statute's reach, contrary to its text, in order to ensure that it will "remain effective" for new technologies. See Pet. App. 10a.

Moreover, the statute's purposes do not support imposing liability for overseas copying. The Federal Circuit emphasized that there is little functional difference between

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[2] Respondent errs in arguing (Br. in Opp. 18) that "[t]he very same zeros and ones created in the U.S. by [petitioner's] programmers are installed on the foreign computers." The same *pattern* of zeros and ones (or, more precisely, the same pattern of electrical impulses that can be denoted by zeros and ones) is installed on every computer that uses the Windows operating system, but a different *copy* of that pattern is installed on each computer. Two copies of any item (including a book or a player-piano music roll) may be identical, but that does not mean that supplying one copy constitutes supplying others.

copying a master disk in the United States and copying it abroad, Pet. App. 6a-7a, but that does not distinguish software from many other components that can easily be manufactured either in the United States or abroad. Even if the overall economic *result* is the same in either case, the location of the relevant *conduct* is not, and Section 271(f) distinguishes between supply from the United States and supply from abroad.

As Judge Rader recognized in dissent, "[t]he only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport." Pet. App. 14a. It may well be that because software is easier to copy than most machine parts, software companies can comply with Section 271(f) by copying software abroad more easily than many traditional manufacturing companies could comply by manufacturing parts of their machines abroad. But that is no basis for judicial amendment of the statute.

Significantly, the Federal Circuit's imposition of liability for a single transmission of software from the United States to a foreign country upsets the balance struck by Congress, and forecloses a technology-neutral application of Section 271(f), by denying companies that design software in the United States *any* avenue of competing abroad without the risk of massive patent liability under United States law for foreign sales. Once software is designed in the United States, any transmission abroad for copying and sale is evidently subject to Section 271(f) in the court of appeals' view. By contrast, in every other industry, a company that designs a product in the United States can use that design to manufacture components abroad without facing Section 271(f) liability. See *Pellegrini*, 375 F.3d at 1117-1118. Thus, instead of promoting the statute's policies in a technology-neutral manner, the Federal Circuit's extension

of Section 271(f) produces a result for the software industry alone that differs significantly from the basic balance struck by Congress, which prohibits the manufacture of components in the United States *while permitting it abroad*. See pp. 10-12, *supra*.

3. If there were any doubt about the proper interpretation of Section 271(f), the presumption against extraterritoriality would resolve it. As this Court observed in *Deepsouth*, "[o]ur patent system makes no claim to extraterritorial effect," and our laws "correspondingly reject the claims of others to such control over our markets." 406 U.S. at 531; accord *Dowagiac Mfg. Co.* v. *Minnesota Moline Plow Co.*, 235 U.S. 641, 650 (1915). That venerable principle follows not only from the text of the Patent Act, which generally grants rights only within the United States, see, *e.g.*, 35 U.S.C. 154(a)(1), but also from considerations of comity, as courts must "assume that legislators take account of the legitimate sovereign interests of other nations when they write American laws." *F. Hoffmann-La Roche Ltd.* v. *Empagran S.A.*, 542 U.S. 155, 164 (2004). Foreign conduct is generally the domain of foreign law, which may embody different policy judgments.

The Federal Circuit's imposition of liability in this case conflicts with those principles. Although respondent argues (Br. in Opp. 20-22) that Section 271(f) governs only the domestic conduct of supplying components of patented inventions, the court of appeals' holding is wrong principally because it is not so limited. The critical aspect of the Federal Circuit's decision is that it allows one act of supply from the United States to give rise to liability each time a copy of the software is made overseas and combined with computer hardware overseas. As Judge Rader noted, petitioner is subjected to open-ended liability in the United States "for products manufactured entirely abroad." Pet. App. 11a.

Congress must provide a "clear * * * indication of intent to extend the patent privilege" abroad before the patent laws will be construed to govern extraterritorially. *Deepsouth*, 406 U.S. at 532; see *F. Hoffmann-La Roche*, 542 U.S. at 164, 174. Although Section 271(f) manifests a clear intent to prevent American companies from making the components of patented inventions in the United States for assembly abroad, it does not manifest an intent, much less a clear one, to regulate copying abroad. As Judge Rader explained, if respondent wants to prevent copying in foreign countries, its remedy lies in obtaining and enforcing foreign patents, not in attempting to apply United States law to acts occurring abroad. Pet. App. 12a, 18a-19a. By arguing (Br. in Opp. 25) that petitioner should not be able to "misappropriat[e] another's patented technology," respondent simply misses the point that foreign law, not United States law, governs the manufacture and sale of components of patented inventions in foreign countries.[3]

C. The Federal Circuit's Decision Warrants Review

1. The questions presented have substantial ongoing practical importance. As the district court recognized, its holding, affirmed by the Federal Circuit, is a "paradigm shift for United States software manufacturers." Pet. App. 38a. Under the court of appeals' decision, companies that design software in the United States cannot distribute their software abroad without running the risk that they will be

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[3] Respondent relies (Br. in Opp. 16) on a statement by petitioner's counsel during a district court proceeding that if petitioner shipped a disk for every unit manufactured overseas, "liability could very well attach." C.A. App. 359. Even leaving aside the equivocal nature of that statement, it has no bearing on the question whether sending a single master copy overseas amounts to supplying from the United States every copy that is made overseas from that master copy.

compelled to pay royalties under United States patent law with respect to all of their foreign sales. Their foreign competitors, by contrast, run no such risk of global liability under United States law, because they are exempt from application of Section 271(f) with respect to their foreign conduct.

As a result, United States software companies will find themselves at a substantial competitive disadvantage in foreign markets, and may even be foreclosed from competing in those markets altogether. That disadvantage will harm the software sector of the American economy and could ultimately compel some software companies to relocate their research and development operations abroad. See Software & Info. Indus. Ass'n Amicus Br. 13-15. Moreover, the logic of the court of appeals' decision could be extended to other high-technology industries.

2. This case presents a suitable vehicle for resolving the questions presented. The legal issues are cleanly presented because the parties stipulated to the facts, see Pet. App. 44a-47a, and this case (unlike *Eolas*) comes to this Court from a final judgment.

Respondent errs in arguing (Br. in Opp. 23) that petitioner "presents an incomplete case for review" because the petition challenges only the Federal Circuit's interpretation of Section 271(f)(1), and Section 271(f)(2) provides an alternative ground for affirmance. The district court entered judgment under Section 271(f) without specifying whether the judgment was based on subsection (1), subsection (2), or both. Pet. App. 42a-43a. The court of appeals likewise referred to Section 271(f) without specifying which subsection or subsections applied. See, *e.g.*, *id.* at 2a. The stipulation of facts arguably supports petitioner's view that the consent judgment was entered only under Section 271(f)(1), because the parties did not stipulate to whether Windows is espe-

cially made or adapted for use in the patented invention, which is relevant to liability under the second but not the first subsection. See *id.* at 46a; 35 U.S.C. 271(f)(1) and (2).

In any event, the only question before the lower courts and this Court is whether petitioner "supplie[d]" a "component" of a patented invention from the United States, and both subsections use those identical terms in the same way and should be read *in pari materia*. See generally *Sullivan* v. *Stroop*, 496 U.S. 478, 484 (1990); *Erlenbaugh* v. *United States*, 409 U.S. 239, 243-244 (1972). Thus, although the questions presented as set forth in the petition reflect petitioner's understanding that it was held liable only under subsection (1), see Pet. (i), the correctness of that understanding is irrelevant to the legal issues before the Court, and this Court's resolution of those issues will have the same effect on the ultimate outcome regardless of the ground on which respondent seeks to defend the judgment below.[4]

3. Because the court of appeals correctly held that software code may be a "component" of a patented invention for purposes of Section 271(f), the Court could grant the petition limited to the second question. In the view of the United States, however, the petition should be granted in full, because the question whether software can be a component of a patented invention is logically antecedent to, and conceptually intertwined with, the question whether petitioner supplied a component of such an invention from the United States.

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[4] An omnibus bill recently introduced in the Senate would, among many other things, repeal Section 271(f). See S. 3818, 109th Cong., 2d Sess. § 5(f) (2006). Any possibility that the relevant subsection of that bill will ultimately be enacted into law is too uncertain to counsel against review of the decision below, especially because previous efforts to repeal or amend Section 271(f) have failed. See Br. in Opp. 22.

CONCLUSION

The petition for a writ of certiorari should be granted.

Respectfully submitted.

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORP.,
Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

MOTION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF AND BRIEF OF THE SOFTWARE & INFORMATION INDUSTRY ASSOCIATION AS *AMICUS CURIAE* SUPPORTING PETITIONER

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On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

SIIA'S MOTION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF SUPPORTING MICROSOFT CORPORATION'S PETITION FOR A WRIT OF CERTIORARI

The Software & Information Industry Association (SIIA) requests leave to file an *amicus curiae* brief in support of Microsoft Corporation's petition for a writ of certiorari. As the principal trade association for the software and digital-content industry, SIIA has a substantial interest in this case. The innovative companies that make up SIIA's membership rely upon patent protection to guard their inventions, but also depend upon the ability to manufacture, develop, and sell their products free from improper assertions of patent rights. Consequently, SIIA's members are involved in patent litigation as both patentees and accused infringers; they cannot be categorized as generally plaintiffs or generally defendants.

SIIA is thus in a balanced position, as *amicus curiae*, to address the proper interpretation of 35 U.S.C. §271(f) as it relates to software. Accordingly, SIIA requests that the Court grant leave to file an *amicus curiae* brief.

Counsel for SIIA has conferred with counsel for petitioner Microsoft Corporation and respondent AT&T Corporation. Microsoft has granted consent for SIIA to file an *amicus curiae* brief in support of its petition. AT&T Corporation has withheld consent to SIIA's filing an *amicus curiae* brief.

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BRIEF OF THE SOFTWARE & INFORMATION INDUSTRY ASSOCIATION AS *AMICUS CURIAE* SUPPORTING PETITIONER

INTEREST OF *AMICUS CURIAE*

Amicus curiae the Software & Information Industry Association (SIIA) is the principal trade association for the software and digital-content industry.[1] SIIA provides global services in government relations, business development, corporate education, and intellectual-property protection to the leading companies that are setting the pace for the digital age. With over 750 members, SIIA is the leading trade association representing software-code and information-content companies. SIIA's members include well-known

[1] Pursuant to Supreme Court rule 37.6, SIIA confirms that no counsel for a party authored this brief in whole or in part and that no person or entity other than SIIA, its members, or its counsel has made a monetary contribution to the preparation or submission of the brief.

names throughout the American economy, including Accenture, AOL, Dow Jones & Company, MuseGlobal, Novell, Oracle, Reuters America, and Sun Microsystems.

The innovative companies that make up SIIA's membership rely upon patent protection to guard their inventions, but also depend upon the ability to manufacture, develop, and sell their products free from improper assertions of patent rights. Consequently, SIIA's members are involved in patent litigation as both patentees and accused infringers; they cannot be categorized as generally plaintiffs or generally defendants. SIIA is thus in a balanced position, as *amicus curiae*, to address the proper interpretation of 35 U.S.C. §271(f) as it relates to software. SIIA is hopeful its views will convince the Court to grant the petition to resolve issues that are of vital importance to America's high-tech sector.

STATEMENT

This case presents an increasingly common fact pattern in international software distribution that can be termed simply the case of the "golden master." A software creator (such as Microsoft) writes, develops, and tests computer code for a software program at its facilities in the United States. The software creator then burns the final object code for the program onto one or more "golden master" disks (CD-ROMs or DVD-ROMs), also in the United States. These disks are then shipped to computer manufacturers located abroad. Each foreign computer manufacturer uses a master disk set, outside of the United States, to copy the computer program onto replicate disks. In turn, foreign-based companies use the replicate disks to produce and install copies of the software program onto new foreign-made computers, which are sold directly in the foreign markets.

In this typical fact pattern, as in this case, no physical component shipped from the United States is ever incorporated or assembled into any computer sold abroad to consumers. In particular, the "golden master" disks that are actually shipped from the United States are never made a part of any computer sold to consumers. Rather, copies of the intangible software code from the master disks are made and recorded on additional disks, and those copies are ultimately used to install the intangible code from the replicate disks onto foreign-made computer systems. Both the replication of the software code from the master disks and the installation of the code from replicate disks occur outside the United States.

This case followed that typical fact pattern. AT&T claimed that Microsoft's Windows software infringed certain patents it held and, although no Windows "golden master" disk shipped by Microsoft from the United States was ever assembled into a final computer, AT&T nevertheless alleged that it was entitled to damages based on all of Microsoft's foreign sales of Windows replicated abroad. In so doing, AT&T reasoned that incorporating foreign-created copies of the Windows object code into computers sold abroad constituted patent infringement under §271(f).

In response, Microsoft did not dispute that exported master disks and encrypted electronic transmissions contained the accused code as part of the object code,[2] nor did Microsoft dispute that it intended for the accused code to be installed during computer assembly in foreign countries. What Microsoft did dispute was whether the intangible exported object code was a component of a patented invention under §271(f), given that the master disks and transmissions originating from Microsoft in the United States never became

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[2] Microsoft, like many software creators, also supplies copies of the Windows object code by encrypted electronic transmissions from the United States to foreign-based replicators and computer manufacturers.

part of the foreign-made computers. Pet. App. 8. For similar reasons, Microsoft further contended that the foreign-replicated copies of the accused code that were loaded onto the foreign-made computers were not "supplied in or from the United States" as required to establish liability under §271(f). *Ibid.*

Although rejected by the district court and a divided panel of the Federal Circuit, Microsoft's arguments reflect the understanding that most businesses, legal commentators, and courts had about the extraterritorial scope of United States patent law before the Federal Circuit's controversial decisions in *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325 (CA Fed.), *cert. denied*, 126 S.Ct. 568 (2005), *Union Carbide Chemicals & Plastics Technology Corp.* v. *Shell Oil Co.*, 425 F.3d 1366 (CA Fed. 2005), and this case. Prior to those decisions, inventors understood that they had to seek and obtain patents in every market where they wanted a monopoly to practice their inventions, and American firms understood that they were not constrained by United States patents from competing in foreign markets. These basic principles coexisted with §271(f), which was enacted only to close a narrow loophole. That loophole—recognized by this Court in *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972)—allowed American companies to take advantage of foreign assembly of components shipped from the United States to evade liability for "making" and "selling" an invention in the United States. In closing the loophole, Congress did not purport to radically alter the legal framework limiting the extraterritorial reach of United States patent law. Rather, at least until the Federal Circuit's recent series of extensions of §271(f), the statute was understood to bar only the export of the physical components of a United States-patented product for assembly abroad, not the use of foreign-produced components in foreign assembly.

This case squarely presents the best opportunity for this Court to review the Federal Circuit's rapidly expanding construction and application of §271(f), which now exposes American business of all kinds—not merely software companies—to potentially unlimited worldwide liability based on a *single* export. Given the role of the Federal Circuit as the national court of appeals in patent cases, only this Court can correct the Federal Circuit's now entrenched (but erroneous) reading of §271(f). In doing so, the Court will prevent vast economic harm to the high-tech industries that are and hope to remain vital to the health of the United States economy. Moreover, because the parties do not dispute the material facts, and because this final judgment squarely presents the important interpretive questions about the meaning of "component" and "supplie[d] . . . from the United States," the case is an ideal vehicle for correcting the Federal Circuit's damaging misapplication of §271(f).

SUMMARY OF ARGUMENT

The Court should grant the petition to correct the Federal Circuit's incorrect and damaging interpretation of §271(f), which is now binding on all lower federal courts. The Federal Circuit has wrongly extended the extraterritorial application of United States patent law to cover products containing copies of a patented product, even when the copies are made in a foreign country, ignoring §271(f)'s clear requirement that "components of a patented invention" be "supplie[d] . . . from the United States" before liability can be assessed. 35 U.S.C. §271(f)(1). The panel majority was concerned that it is generally easier, cheaper, and faster to make copies of software than to make copies of traditional physical components. But those considerations are not—and should not be—relevant to the application of the statute. It is the province of Congress, not the courts, to define the scope of liability under United States patent law.

The Federal Circuit's expansive reading of §271(f) exposes American producers to potentially global liability and upsets investments and plans made in reasonable reliance on previously settled law that limited the extraterritorial application of United States patent law to the narrow exception created in §271's 1984 amendments. Moreover, the broad extraterritorial application of United States patent law upsets the international patent regime and disrespects foreign legal systems, which should have primary responsibility for enforcing intellectual-property rules regarding conduct occurring within their jurisdictions.

Because the view of the Federal Circuit majority produces harmful consequences implicating important federal interests, and because this case is an excellent vehicle for resolving §271(f)'s important interpretive questions, the Court should grant the petition and reverse the judgment of the Federal Circuit.

ARGUMENT

I. THE FEDERAL CIRCUIT'S EXPANSIVE READING OF §271(F) UPSETS THE SETTLED AND REASONABLE EXPECTATIONS OF AMERICAN PRODUCERS.

The Court should grant the petition to correct the Federal Circuit's erroneous interpretation of §271(f), which all lower federal courts must accept as precedent in the absence of further guidance from the Court. The Federal Circuit's current interpretation is unfaithful to the text of §271(f), exceeds Congress's stated objectives in amending the patent statute, and has severe consequences for American companies that operate on a worldwide basis, who acted in reasonable reliance on previously settled law. The petition presents recurring questions that are of vital importance not only to the software industry but also to other high-tech industries in the United States's increasingly information-based economy.

A. The Federal Circuit's Expansive View of §271(f) Disregards the Statutory Text and Misinterprets Congressional Intent.

The text of §271(f) itself contradicts the far-reaching extraterritorial extension of patent liability judicially declared by the Federal Circuit. In particular, the Federal Circuit's extended construction misconstrues two key phrases in the statute. First, the Federal Circuit misinterpreted the meaning §271(f) in holding that the generalized information contained in software code is, itself, a "component[] of a patented invention" without regard to the manifestation of the code in a particular computer. Second, the Federal Circuit unduly stretched the term "supplies" in holding that copies of a patented product are "supplie[d] . . . from the United States" even when the copies are made in a foreign country. 35 U.S.C. §271(f).

The term "component" in §271(f) contemplates a physical product and, as such, does not aptly describe the exported golden masters' relationship to the accused products because the master disks and electronic transmissions never became a constituent part of the foreign-made computers. As the Federal Circuit previously noted in *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113 (CA Fed. 2004), §271(f) is "clear on its face" and applies "only where components of a patent invention are *physically present* in the United States and then either sold or exported 'in such a manner as to actively induce the combination of such components outside the United States in a manner that would infringe the patent if such combination occurred within the United States.'" *Id.*, at 1117 (emphasis added). The only things that were ever physically present in the United States were the master disks and the electronic transmissions before they were sent, but those things never even touched—much less became a part

of—the accused products.[3] At most, a "component[] of a patented invention" must refer to the particular copy of the software code that is downloaded onto an accused computer. *Id.*, at 1116.

Even if intangible information such as computer code could be characterized as a "component" for purposes of §271(f), the particular embodiment of the code that becomes part of an infringing product must be "supplie[d] . . . in or from the United States" for there to be liability under the statute. 35 U.S.C. §271(f)(1). The master disks and

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[3] Part of what seems to have confused the majority is the distinction between the embodiment of the computer program (*i.e.*, the master disks containing the object code) and the information contained on it (*i.e.*, the computer instructions consisting of 0s and 1s). Under the majority's analysis, the "component" supplied "in or from the United States" must be the intangible information rather than the disks containing the code, as no one can argue that the physical disks themselves ever touched any of the accused computers. But imposing liability for transmitting instructions from the United States that are later duplicated in a foreign country for foreign use, under the misperception that they are a component supplied from the United States, produces anomalous results. For example, the majority's approach would find infringement in the "'exportation' of a computer program" by someone who leaves the country having memorized the 0s and 1s "to input and use the program on a computer in a foreign country." Pensabene & Berschadsky, Software Patent Damages for Foreign Sales: Have the District Courts Gone Too Far?, 21 Computer & Internet Lawyer 23, 27 (July 2004). Established United States patent law certainly does not support that result. See *Pellegrini*, 375 F.3d, at 1117 (holding that components manufactured abroad cannot be components supplied from the United States even when they were made according to design and manufacturing instructions sent from the United States); *Bayer AG* v. *Housey Pharm., Inc.*, 340 F.3d 1367, 1376-1377 (CA Fed. 2003) (avoiding a construction of §271(g) that would find infringement in the converse situation in which a person enters the country having memorized information generated by a patented process). The Federal Circuit majority erred in failing to limit the application of §271(f) to the particular physical embodiment of the patented computer program, consistent with the express terms of the statute itself.

encrypted transmissions and the code that they contain (the only things actually sent from the U.S.) are not actually incorporated into the allegedly infringing products. Rather, as Judge Rader accurately observed in his dissent:

> "[Foreign] distributors copy the components supplied from the United States and then install those copies into the infringing products. The [foreign] manufacturers do not install the actual component 'supplied' from the U.S. (the master disc). Instead, they install a copy made in [the foreign country]."
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> * * *
>
> "[C]opying and supplying are separate acts with different consequences—particularly when the 'supplying' occurs in the United States and the copying occurs [abroad]. As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software. Thus copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying." Pet. App. 13a, 15a-16a (Rader, J., dissenting).

A simple hypothetical example confirms Judge Rader's conclusion that no component of the accused computers was supplied from the United States. Suppose a clock maker produces a single gear within the United States that infringes a United States patent. If the clock maker inserted that single gear into one of his clocks, that particular clock would be an infringing product under United States patent law, whether the clock were sold in the United States or abroad. Moreover, if the clock maker made 100 copies of the gear in the United States and exported the copies to be integrated into clocks assembled and sold in a foreign country, the clock maker would clearly be liable under §271 because those 100 copies were components supplied from the United States. But if the clock maker produces one infringing gear within the United

States, sends that single gear abroad, makes copies of the gear abroad, and then inserts the replicate gears into foreign-assembled clocks that are sold in a foreign country, there can be no liability under §271(f) because the foreign-made gears are not components "supplie[d] . . . from the United States." 35 U.S.C. §271(f)(1).

Although no federal court would impose §271(f) liability for the clocks containing foreign-made gears, the panel majority imposed liability on software makers in legally indistinguishable circumstances. The only differences between making copies of clock gears and making copies of software—ease and speed—are statutorily irrelevant. But those legally irrelevant differences are what led the panel majority to simply rewrite the statute, confessing that its reading of §271(f) aimed to address technological advances that "developed *after* the enactment of §271(f)." Pet. App. 10a (emphasis added). The panel majority's judicial amendment of §271(f) jettisons the statute's requirement that the component be supplied from the United States merely because the production of foreign-made components seemed too quick or easy. Ignoring the Court's instruction to avoid the extraterritorial extension of United States patent law absent a clear statement from Congress, *Deepsouth*, 406 U.S., at 530, the panel majority disregarded §271(f)'s plain language in an effort to guess how Congress would have wanted patent law to apply to software and other new-economy technologies.

The words of the statute are the best evidence of Congress's intent, but, in addition to ignoring §271(f)'s text, the panel majority also overlooked statements from the Congressional Record and the President confirming that §271(f) was enacted solely to close the gap identified in *Deepsouth*. In *Deepsouth*, the Court rejected an expansive reading of §271(a)'s proscription against "making" to extend to exporting constituent parts for foreign assembly. *Id.*, at

526. In so doing, this Court cautioned that "the sign of how far Congress has chosen to go can come only from Congress." *Id.*, at 530.

Picking up on the Court's implicit invitation from *Deepsouth*, Congress stepped in to remedy an obvious loophole. According to legislative history, §271(f) was enacted to "prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad." Section-by-Section Analysis of Patent Law Amendments Act of 1984, H.R. 6286, 98th Cong., 130 Cong. Rec. 10,525-10,526 (Oct. 1, 1984). The stated objective in enacting §271(f) was to overrule *Deepsouth* and thus "to avoid encouraging *manufacturing* outside the United States." *Id.*, at 10,525 (emphasis added). In signing §271(f) into law, President Reagan confirmed that the amendment "close[d] a loophole in existing law" that allowed individuals to avoid liability for patent infringement "by arranging for *final assembly* of patent machines to occur offshore." President's Message to Congress, Signing of Patent Law Amendments Act of 1984, 20 Weekly Comp. Pres. Doc. 45 (Nov. 9, 1984). This legislative history confirms that Congress narrowly meant to proscribe only the domestic exportation of physical components for foreign assembly into otherwise-infringing combinations. In this case, however, the Federal Circuit has stretched §271(f) to cover not only combinations not assembled here but also components that are not even made in the United States.

B. The Federal Circuit's Now-Confirmed Interpretation of §271(f) Deviates From Previously Settled United States Patent Law.

In addition to relying on the text and history of §271(f), American producers with overseas operations have reasonably relied on years of precedent confirming the statute's

limited extraterritorial scope. Recent cases have upset those established expectations. See, *e.g.*, Pet. App. 1a (broadly construing "component" and "supplie[d] . . . from the United States"); *Union Carbide*, 425 F.3d, at 1366 (extending §271(f) to impose liability for the export of elements used in a patented method); *Eolas*, 399 F.3d, at 1325 (holding that exported software and methods are "components" under §271(f)). Those cases, though now confirmed as the settled law of the Federal Circuit, represent an unwarranted sea change in the law that only this Court can correct.

Before the recent transformation in Federal Circuit law, existing precedent applied §271(f) narrowly, reinforcing the textual and historical interpretation that reasonably led software and other information-based companies to believe that United States patent law does not govern their conduct in foreign markets. For example, in *Standard Havens Products, Inc.* v. *Gencor Industries, Inc.*, 953 F.2d 1360 (CA Fed. 1991), the Federal Circuit held that §271(f) did not reach defendants selling devices to foreign customers who used them to perform patented processes. *Id.*, at 1374. In *Johns Hopkins University* v. *Cellpro, Inc.*, 152 F.3d 1342 (CA Fed. 1998), the Federal Circuit reviewed the district court's conclusion that the defendant's production of monoclonal antibody suspensions infringed the plaintiff's patents, even though the suspensions were produced outside the United States by cloning copies of the antibody from a master cell bank that had been sent abroad before the patent issued. *Id.*, at 1348, 1351-1352. The Federal Circuit reversed the district court's repatriation order, which also ordered destruction of the master cell bank and its clones, because the clones were to be sold overseas and posed no threat of future infringement in the United States. *Id.*, at 1366-1367. And just two years ago the Federal Circuit held that §271(f) did not reach circuit chips manufactured in a foreign market, even though the

chips were constructed using instructions sent from the United States. *Pellegrini*, 375 F.3d, at 1117.[4]

Copying computer instructions (*i.e.*, code) is, at bottom, no different from using a recipe to make a drug, a mold to make a tire, a cell bank to clone helpful antibodies as in *Cellpro*, or instructions to produce a computer chip as in *Pellegrini*. Before this case, there was uniform agreement between the case law and legal commentary that exporting those items would not trigger United States patent liability for foreign manufacturing. But, given the Federal Circuit's new approach, there is no principled reason why §271(f) would not place those and other similar activities performed wholly in foreign countries under the control of United States patent law. The Federal Circuit's new rule, confirmed in recent cases interpreting §271(f), is a striking deviation from prior case law. This case—a final judgment on the merits with stipulated facts regarding both of §271(f)'s key phrases ("components of a patented invention" and "supplie[d] . . . from the United States")—presents the ideal opportunity to address the proper application of §271.

C. The Federal Circuit's Flawed Analysis Harms America's Important High-Technology Sectors and the National Economy in General.

The Federal Circuit majority's broad interpretation of §271(f) implicates the important federal interest in preventing major economic injury to the national economy, making the Court's review of the case not only timely, but critical. The Federal Circuit's decision is especially harmful to America's high-technology sector, which has flourished in the more than two decades since Congress passed the 1984 amendments to the patent statute. The Federal Circuit's broad extraterritorial

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[4] See also *Bayer*, 340 F.3d, at 1372-1373 (noting that the term "component" in §271(g)(2) "appears to contemplate a physical product").

interpretation of §271(f) now creates potentially worldwide liability not only for software companies but for several vital industries that rely on templates and prototypes developed in the United States. By generating immediate legal exposure for United States companies that Congress never intended, the broad reading of §271(f) may dissuade information-based companies from maintaining their operations in the United States, as doing so would burden them with a competitive disadvantage in relation to foreign companies.

Before the Federal Circuit's recent shift toward an expansive construction, §271(f) had been understood during the decades since its enactment to cover only physical components exported from the United States for final assembly abroad. The technology companies that have propelled the explosive growth of the American economy in that time period have made investments at home and abroad in reliance on the settled framework of United States patent law. Companies in the high-technology sector, in particular, held settled and reasonable expectations that they could lawfully design and develop their products in the United States and then manufacture, in factories located abroad, products destined for foreign markets, subject to foreign patent regulation, but without incurring liability based on United States patents for such foreign manufacture and sales. That arrangement enabled companies to create hundreds of thousands of desirable knowledge-worker jobs in the United States.

With the Federal Circuit's unjustified shift in interpreting United States patent law to govern international activities that Congress never intended to regulate, companies are exposed to potentially crippling present and future global liability for the manufacture and sale of products that did not—and could not—infringe under the previous, settled state of the law. Now, the export of a single tangible component exposes the company to potentially endless liability under United States

patents for foreign copying of that component. Under the pre-*Eolas* framework, a firm's liability would be capped by the amount of domestic sales. But under the Federal Circuit's new framework for §271(f), America's high-technology companies (many of which depend on both domestic and international sales) now face unprecedented global exposure.

The Federal Circuit's expansive interpretation of §271(f) affects numerous important industries of the new economy, in which the United States currently has a comparative advantage over most countries. The new standards significantly impact United States-based developers not only of software but also of semiconductor chips, cell lines, pharmaceuticals, and other products that rely heavily on templates and prototypes, and other product "masters." Traditional goods usually involve the assembly of parts on a one-to-one basis. But high-technology producers invest massive amounts of time and money to develop single prototypes and templates that, after the huge initial investment, can be easily reproduced to make thousands or millions of perfect copies.

In the biotech industry, for example, companies manipulate and develop monoclonal antibodies from cloned cells called hybridomas. See *Cellpro*, 152 F.3d, at 1347. It often takes years to develop these master cells, but once created, biotech companies use them to produce hundreds of monoclonal antibodies in a single day. As in *Cellpro*, American companies wanting to sell bioproducts internationally often export a single hybridoma or transmit the genetic code of a cell line, for example, and carry out production in particular foreign markets. The same basic arrangement occurs in the pharmaceutical industry, which spends billions of dollars to develop and test prototypes that can later be reproduced cheaply. Even more traditional industries, such as tire manufacturers, design molds and templates in the United States that enable them to mass-produce their goods in

foreign markets. These industries, which are vital to the current and future health of the American economy, face the daunting threat of uncapped liability.

In addition to exposing American companies to unwarranted international liability based on United States patents in the near future, the Federal Circuit's new approach also creates disincentives for future investment in America's high-tech industries. Companies may move their design facilities abroad to avoid liability under United States patent law; others that would have invested in design operations in the United States may choose to go elsewhere. The elimination of knowledge-worker jobs, without receiving any benefit in return except to give patent holders a lottery ticket based on United States patents for damages from foreign-produced goods, would damage America's economy.

Without waiting for Congress to consider and decide whether the existing scheme of patent regulation needed adjustment, the Federal Circuit majority candidly admitted that its modified construction of §271(f) was intended to address advances in fields of technology that "developed *after* the enactment of §271(f)." Pet. App. 10a (emphasis added). Struck by the speed and ease of production from new-economy templates, the panel majority tried to anticipate how Congress might choose to extend extraterritorial patent liability. But as this Court aptly observed in *Deepsouth*, the "sign of how far Congress has chosen to go can come only from Congress." 406 U.S., at 530. The lessons learned from *Deepsouth* and Congress's narrow response apply with particular force in the "golden master" and similar scenarios. Perhaps Congress would reach the same result fashioned by the Federal Circuit majority; but most likely it would not. It is for Congress to define the duties of the new knowledge-industry firms that export designs and intangible information, rather than physical "slitters" and "tumbler[s]," *Deepsouth*, 406 U.S., at 520, to foreign markets. Given the important

national interests in preventing unwarranted economic harm, the Court should grant the petition.

II. BROAD EXTRATERRITORIAL APPLICATION OF U.S. PATENT LAW UPSETS THE INTERNATIONAL PATENT REGIME AND DISRESPECTS FOREIGN LEGAL SYSTEMS.

The Federal Circuit's interpretation of §271(f) is also at odds with principles of comity, making review desirable to avoid the gratuitous encroachment of United States law on the patent systems of foreign nations. Strong incentives previously existed for American patent holders to "seek [protection] abroad through patents secured in countries where [their] goods are being used." *Deepsouth*, 406 U.S., at 531. But allowing the Federal Circuit's new expansive construction of §271(f) to stand would weaken those incentives. Meanwhile, this expanded extraterritorial effect of United States patent law would impose duties on conduct occurring wholly within foreign countries, conduct that Congress respectfully left to the regulatory schemes of those sister nations. Weighing the competing interests—including whether to permit patents, under what criteria, and for how long—involves difficult policy choices that, in our legal system, are the province of the legislative branch.

When faced with similar policy choices and balancing of interests, Congress has generally limited the extraterritorial reach of United States patents. Absent "a clear and certain signal" to the contrary, Congress leaves the difficult choices about extraterritorial patent protection exclusively to foreign governments in whose territory the otherwise-infringing products are produced. *Deepsouth*, 406 U.S., at 531. Similarly, giving proper regard for the right of other sovereigns to regulate commerce (including intellectual-property protections) within their markets, the Court has repeatedly emphasized the United States patent system's limited extraterritorial effects and has stated that "we

correspondingly reject the claims of others to [extraterritorial] control over our markets." *Ibid.*[5] Implicit in that statement is the Court's recognition that extraterritorial patent protections create substantial risks of international conflict, making it particularly inappropriate for the Federal Circuit to expand the application of United States patent law in foreign markets beyond the bounds set by Congress. Cf. Pet. App. 10a (interpreting the statute to account for technological advances "that developed after the enactment of §271(f)"). Subject to §271(f)'s narrow exception, *foreign* patents provide the exclusive patent liability for American companies competing "with an American patent holder in foreign markets." *Deepsouth*, 406 U.S., at 531.

The Federal Circuit majority's parochial disregard for the sovereignty of other countries to regulate conduct within their own markets may eventually harm American producers and consumers. Foreign nations—upset with the encroachment of American patent law on their legal regimes or simply looking for justifications to impose protectionist measures—may attempt to impose liability on American companies producing goods within the United States that incorporate components or even intangible ideas covered by patents in their legal systems. That type of legal liability, and the possible trade barriers put up in retaliation, would increase costs for many producers and would raise prices for consumers in the United States and abroad.

CONCLUSION

As aptly expressed by Judge Rader's well-reasoned dissent, the view of the Federal Circuit majority produces harmful

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[5] See also *Dowagiac Mfg. Co.* v. *Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915) (noting that U.S. patent laws do not apply extra-territorially); *Brown* v. *Duchesne*, 19 How. 183, 195 (1856) (recognizing that American patent laws generally are "not intended to[] operate beyond the limits of the United States").

consequences and is not legally justified, yet this is the approach that will control the decisions of the lower federal courts. Given that reality, and the fact that this case is an excellent vehicle for resolving §271(f)'s important interpretive questions, the Court should grant the petition and reverse the judgment of the Federal Circuit.

Respectfully submitted,

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

JOINT APPENDIX

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PETITION FOR WRIT OF CERTIORARI FILED FEBRUARY 17, 2006
CERTIORARI GRANTED OCTOBER 27, 2006

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The following opinions and orders have been omitted in printing this joint appendix because they appear on the following pages in the appendix to the petition for a writ of certiorari:

Memorandum and Order of the United States District Court for the Southern District of New York (Mar. 5, 2004) 20a

Opinion of the United States Court of Appeals for the Federal Circuit (July 13, 2005) 1a

Order of the United States Court of Appeals for the Federal Circuit denying petition for rehearing and rehearing en banc 39a

RELEVANT DOCKET ENTRIES IN THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

AT&T V MICROSOFT
2004-1285

* * *

Date	History
7/6/2004	Appellant Principal Brief Filing Date
9/22/2004	Appellee or Cross Appellant Principal Brief Filing Date
9/24/2004	Appellant Reply Brief Filing Date
	* * *
9/27/2004	Appendices Filing Date
4/7/2005	Oral Argument Date / Calendared
7/13/2005	Disposition: Affirmed; by Panel
10/27/2005	Mandated on
	* * *
9/13/2005	**MOTION:** Entry 49: by Appellee - MOTION FOR LEAVE TO FILE A CORRECTED VERSION OF THEIR OPPOSITION TO THE PETITION FOR REHEARING. **SERVICE:** by Mail on 9/13/2005
9/16/2005	**ACTION:** Entry 50: MOTION GRANTED.
8/16/2005	**MOTION:** Entry 46: by Appellee - MOTION FOR A 14-DAY EXTENSION OF TIME TO FILE ITS RESPONSE TO THE PENDING PETITION FOR REHEARING EN BANC (&

SUSPENSION OF THE DUE DATE FOR ITS RESPONSE WHILE THE MOTION IS PENDING). **SERVICE:** by Fax on 8/16/2005

8/17/2005 **ACTION:** Entry 47: MOTION GRANTED. THE RESPONSE IS DUE 9/9/05.

* * *

7/19/2005 **MOTION:** Entry 34: by Appellant - MOTION FOR A 14-DAY EXTENSION OF TIME TO FILE A COMBINED PETITION FOR PANEL REHEARING & REHEARING EN BANC. **SERVICE:** by Fax on 7/19/2005

7/21/2005 **ACTION:** Entry 35: MOTION GRANTED. THE PETITION IS DUE 8/10/05.

* * *

7/15/2004 **MOTION:** Entry 18: by Appellee - REQUEST FOR JUDICIAL NOTICE. **SERVICE:** by Hand on 7/15/2004
REPLY 1: 8/2/2004, Entry # 19
REPLY 2: 8/9/2004, Entry # 20

9/1/2004 **ACTION:** Entry 21: MOTION GRANTED IN PART AND DENIED IN PART. AT&T TO FILE REPLACEMENT BRIEF BY 09/22/04. IF NECESSARY, MICROSOFT MAY FILE REPLACEMENT REPLY BRIEF WITHIN 10 DAYS FROM SERVICE OF AT&T'S REPLACEMENT BRIEF.

* * *

RELEVANT DOCKET ENTRIES IN THE UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK

CIVIL DOCKET FOR CASE #: 1:01-cv-04872-WHP

* * *

Date Filed	#	Docket Text
06/04/2001	1	COMPLAINT filed. Summons issued and Notice pursuant to 28 U.S.C. 636(c). FILING FEE $150.00 RECEIPT # 407654. (db) (Entered: 06/05/2001)
06/04/2001		Magistrate Judge Theodore H. Katz is so designated. (db) (Entered: 06/05/2001)
* * *		
06/11/2001	3	Notice of Case Assignment to Judge William H. Pauley III. Copy of notice and judge's rules mailed to Attorney(s) of record: Hallie B. Levin, Robert D. Kaplan. (gmo) (Entered: 06/12/2001)
07/10/2001	4	AFFIDAVIT OF SERVICE of summons and complaint as to Microsoft Corp. by Microsoft Corporation's registered agent on 6/22/01. Answer due on 7/12/01 for Microsoft Corp. (kw) (Entered: 07/11/2001)
* * *		
07/20/2001	8	ANSWER to Complaint and COUNTERCLAIM by Microsoft Corp. (Attorney James H. Carter) against AT&T Corp. Firm of: Sullivan & Cromwell.

		(kw) (Entered: 07/24/2001)
		* * *
08/08/2001	11	AMENDED ANSWER to Complaint by Microsoft Corp.: amends [8-1] answer. (tp) (Entered: 08/09/2001)
08/08/2001	11	COUNTERCLAIM by Microsoft Corp. against AT&T Corp. (tp) (Entered: 08/09/2001)
		* * *
08/10/2001	12	REPLY by AT&T Corp. to [11-1] counter claim; Firm of: Friedman Kaplan Seiler et al by attorney Robert D. Kaplan for counter-defendant AT&T Corp., Hallie B. Levin for counter-defendant AT&T Corp. (cd) (Entered: 08/13/2001)
		* * *
08/22/2001	16	REPLY by AT&T Corp. to [11-1] counter claim; Firm of: Friedman, Kaplan, Seiler & Ademan LLP by attorney Robert D. Kaplan for counter-defendant AT&T Corp. (pl) (Entered: 08/23/2001)
		* * *
01/08/2002	25	ORDER; that AT&T must amend its complaint to list the additional codecs it alleges infringes the '580 patent in order to obtain discovery on those codecs; Microsoft shall reveal whether it intends to rely on the "Opinion of counsel" defense to allegations of willfulness by 4/15/02. (signed by Judge William H. Pauley III); Copies mailed. (pl) (Entered:

		01/09/2002)
		* * *
02/26/2002	28	AMENDED COMPLAINT by AT&T Corp. (Answer due 3/11/02 for Microsoft Corp.) amending [1-1] complaint. Jury trial requested. (kw) (Entered: 02/27/2002)
		* * *
03/14/2002	29	ANSWER AND AMENDED COUNTERCLAIM TO THE AMENDED COMPLAINT by Microsoft Corp. (Attorney Dale Heist from the Firm: Sullivan & Cromwell). (cd) (Entered: 03/15/2002)
		* * *
04/15/2002	32	AMENDED ANSWER TO [28-1] amended complaint by Microsoft Corp. (Attorney James H. Carter from the Firm: Sullivan & Cromwell). (bai) (Entered: 04/19/2002)
04/15/2002	32	AMENDED COUNTERCLAIM by Microsoft Corp. against AT&T Corp. (bai) (Entered: 04/19/2002)
05/03/2002	33	REPLY by Microsoft Corp. to amended counterclaim: [32-1] counterclaim; Firm of: Friedman Kaplan Seiler & Adelman LLP by attorney Hallie B. Levin for counter-defendant AT&T Corp. (sn) (Entered: 05/07/2002)
05/07/2002	34	OPENING BRIEF by AT&T Corp. in support of claim construction. (db) (En-

		tered: 05/10/2002)
		* * *
05/30/2002	37	OPENING CLAIM CONSTRUCTION BRIEF by Microsoft Corp. Appendix attached. (yv) Modified on 06/06/2002 (Entered: 06/06/2002)
		* * *
06/04/2002	38	CLAIM CONSTRUCTION RESPONSE BRIEF by Microsoft Corp. (db) (Entered: 06/12/2002)
06/04/2002	39	REPLY by AT&T Corp. to Microsoft's opening [38-1] opposition memorandum (db) (Entered: 06/12/2002)
		* * *
06/27/2002	42	JOINT CLAIM Construction Statement purs. to Scheduling Order of 6/26/02. (sac) (Entered: 07/02/2002)
		* * *
07/01/2002	46	Amendments to its claim construction BRIEFS by AT&T Corp. re: (ll) (Entered: 07/11/2002)
07/01/2002	47	Supplemental Claim Construction BRIEF by Microsoft Corp. re: (ll) (Entered: 07/11/2002)
		* * *
09/11/2002	59	Second amendment to its claim construction briefs by AT&T Corp. Exhibits 23-29 attached. (yv) (Entered: 09/16/2002)
09/11/2002	60	Second Amended Claim Construction

		Brief by Microsoft Corp. (yv) (Entered: 09/16/2002)
09/18/2002	63	REPLY by Microsoft Corp. Re: AT&T's Second Amendment to its Claim Construction Brief (cd) (Entered: 09/25/2002)
09/18/2002	64	REPLY by AT&T Corp. Re: Microsoft's Second Amended Claim Construction Brief (cd) (Entered: 09/25/2002)
		* * *
10/23/2002	80	BRIEF by Microsoft Corp. re: Post-Hearing claim construction brief. (gq) (Entered: 10/25/2002)
10/23/2002	81	BRIEF by AT&T Corp. re: Initial post-hearing claim construction brief. (gq) (Entered: 10/25/2002)
		* * *
11/06/2002	85	REPLY by AT&T Corp. Re: [80-1] opposition memorandum (djc) (Entered: 11/12/2002)
11/06/2002	86	Microsoft's Post-hearing Claim Construction Response Brief. (djc) (Entered: 11/12/2002)
		* * *
04/23/2003	102	SECOND AMENDED ANSWER by Microsoft Corp. to [28-1] amended complaint. (Attorney James H. Carter from the Firm: Woodcock Washburn LLP). (sb) (Entered: 04/24/2003)
04/23/2003	102	AMENDED COUNTERCLAIM by Mi-

		crosoft Corp. against AT&T Corp.: amending [32-1] counter claim. (sb) (Entered: 04/24/2003)
04/28/2003	103	STIPULATION and ORDER, Microsoft Corp. is granted leave to file the second amended answer and amended counterclaim to AT&T's amended complaint for patent infringement, which shall be deemed served and filed upon the Court's execution of this stipulation and order. (signed by Judge William H. Pauley III) (sb) (Entered: 04/29/2003)
06/24/2003	112	ORDER, For the reasons set forth in this memorandum and order; this Court construes the thirteen disputed claim terms and phrases as further set forth in this order, this memorandum and order constitutes the decision of this court concerning claim construction. (signed by Judge William H. Pauley III); (dle) (Entered: 06/25/2003)
* * *		
11/18/2003	160	NOTICE OF MOTION (FILED ON SERVICE DATE) by Microsoft Corp. in limine barring evidence as to supposed liability for patent infringement under 35 USC 271(f). No Return Date indicated. (db) (Entered: 11/20/2003)
11/18/2003	161	MEMORANDUM OF LAW by Microsoft Corp. in support of [160-1] motion in limine barring evidence as to supposed liability for patent infringement under 35 USC 271(f). (db) (Entered: 11/20/2003)

* * *		
12/01/2003	163	MEMORANDUM OF LAW in Opposition re: [160] Motion in Limine. Document filed by AT&T Corp. (sac,) (Entered: 12/08/2003)
* * *		
12/08/2003	185	REPLY MEMORANDUM OF LAW in Support of the [160] Motion in Limine. Document filed by Microsoft Corporation. (tp,) (Entered: 12/19/2003)
* * *		
01/26/2004	205	Memorandum In Support Of Microsoft's Motion in Limine To Exclude Certain Aspects Of AT&T'S Damages Claim. Document filed by Microsoft Corporation. (jmi,) (Entered: 01/30/2004)
* * *		
02/09/2004	244	AT&T's opposition to Microsoft's motion in limine to exclude certain aspects of AT&T's damages claim. Document filed by AT&T Corp. (dle,) (Entered: 02/11/2004)
* * *		
03/05/2004	284	ORDER, that for the reasons set forth herein, defendant Microsoft Corporation's Motion for Partial Summary Judgment pursuant to 35 U.S.C. 271(f) is Denied. (Signed by Judge William H. Pauley III on 3/5/04) Copies Mailed By Chambers. (tp,) (Entered: 03/05/2004)
03/08/2004	286	JUDGMENT is entered in favor of

		AT&T and against Microsoft that US Patent 32,580 is enforceable and not invalid, AT&T's infringement claim is dismissed, all of Microsoft's counterclaims are dismissed with prejudice, the parties have agreed upon a settlement payment, the parties intend that defendant have the right to appeal the Court's determination, the Court shall retain jurisdiction to enforce the terms of the settlement, and each party shall bear its own costs and attorney's fees. (Signed by Judge William H. Pauley III on 03/05/04) (jf,) (Entered: 03/08/2004)
		* * *
03/08/2004	287	STIPULATION AND ORDER; the District Court ruled in favor of AT&T on all 271(f) issues in an opinion dated 3/5/04. AT&T and Microsoft have entered into a confidential settlement agreement pursuant to which Microsoft has agreed to pay damages to AT&T in connection with AT&T's allegations that Microsoft's United States sales infringe the '580 patent. The settlement agreement obligates Microsoft to make an additional payment of damages to AT&T in the event that the District Court's 271(f) ruling is affirmed on appeal. (Signed by Judge William H. Pauley III on 3/8/04) (sac,) (Entered: 03/08/2004)
		* * *
03/19/2004	291	NOTICE OF APPEAL TO THE FEDERAL CIRCUIT from [286] Judgment.

		Document filed by Microsoft Corporation. Filing fee $255.00, receipt number E502750. Copies of Notice of Appeal to the Federal Circuit mailed to Attorney(s) of Record: Cooley Godward, LLP, CA, Cooley Godward, LLP, VA and Friedman, Kaplan, Seiler & Adelman, LLP. (dt,) (Entered: 03/19/2004)
* * *		
11/02/2005	296	MANDATE of USCA (Certified Copy) as to [291] Notice of Appeal to the Federal Circuit, filed by Microsoft Corporation, USCA Case Number 04-1285. Ordered, Adjudged and Decreed that the judgment of the District Court is AFFIRMED. Jon Horbaly, Clerk USCA. Issued As Mandate: 10/27/2005. (nd,) (Entered: 11/02/2005)

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

AT&T CORP.,

Plaintiff,

Civil Action No.
01 Civ. 4872 (WHP)

-against-

AMENDED COMPLAINT FOR PATENT INFRINGEMENT AND DEMAND FOR JURY TRIAL

MICROSOFT CORPORATION,

Defendant.

Plaintiff AT&T Corp. alleges as follows:

THE PARTIES

1. Plaintiff AT&T Corp. ("AT&T") is a corporation organized under the laws of the State of New York, and having executive offices in this District at 32 Avenue of the Americas, New York, New York 10013-2412.

2. Defendant Microsoft Corporation ("Microsoft") is a corporation organized under the laws of the State of Washington, having its principal place of business at One Microsoft Way, Redmond, Washington 98052-6399, and having at least two offices in the State of New York including an office in this District at 825 Eighth Avenue, New York, New York 10019.

JURISDICTION AND VENUE

3. This is a civil action for patent infringement arising under the United States patent statutes, Title 35, United States Code, § 1 et seq.

4. The Court has jurisdiction over the subject matter of this Action under Title 28 United States Code, §§ 1331 and 1338(a).

5. Microsoft is subject to this Court's personal jurisdiction because it (i) transacts business within the State of New York through, *inter alia*, its office in this District; (ii) has designated an agent for service of process in the State of New York; (iii) has committed tortious acts of patent infringement within the State and in this District; (iv) has committed tortious acts of patent infringement without the State causing injury to person or property within the State and regularly does or solicits business, or engages in any other persistent course of conduct, or derives substantial revenue from goods used or consumed in the State; (v) previously subjected itself to jurisdiction in the State by filing at least twelve suits in this Court including the following: *Microsoft Corporation v. K&E Computer, Inc.*, No. 00 Civ. 7550 (RLC) (S.D.N.Y. filed October 5, 2000); *Microsoft Corporation v. Alliance Tech., Inc.*, No. 99 Civ. 10254 (S.D.N.Y. filed October 4, 1999); *Microsoft Corporation v. Yaruss*, No. 99 Civ. 08904 (S.D.N.Y. filed August 13, 1999); and *Microsoft Corp. v. NY Computer Exchange, Inc.*, No. 99 Civ. 08905 (S.D.N.Y. filed August 13, 1999); and (vi) has admitted that it is subject to this Court's personal jurisdiction in this Action in its Amended Answer and Counterclaim of Defendant Microsoft Corporation.

6. Venue is proper in this District under Title 28 United State Code, §§ 1391(b)-(c) and 1400(b).

BACKGROUND

The Parties' Business

7. AT&T is one of the leading communications companies in the world providing voice, data, and video communications services to large and small businesses, consumers, and government entities.

8. Microsoft develops, manufactures, licenses, and supports a wide range of software products for a multitude of computing devices.

The Invention of the '580 Patent

9. On January 19, 1988, the United States Patent and Trademark Office duly and legally issued U.S. Patent Number Reissue 32,580 ("the '580 Patent") to Bishnu S. Atal and Joel R. Remde, entitled "Digital Speech Coder." A copy of the '580 Patent is attached as Exhibit A. The '580 Patent relates to the field of speech coding technology, a field that studies the compression of speech signals. The '580 Patent is a reissue of United States Patent Number 4,472,832, which issued on September 18, 1984. The '580 Patent is assigned to AT&T. The '580 Patent expired on December 1, 2001.

10. Speech coding technology can reduce the size of a sound file that contains a speech recording. Because the file is smaller, it takes less time to transfer the file across a network, and the file takes up less space on storage devices, such as hard drives. Speech coding technology can be applied to everyday applications such as certain computer software, digital cellular telephones, audio-video conferencing, voice messaging, and Internet voice communications.

11. Dr. Bishnu S. Atal, one of the inventors of the '580 Patent, is internationally recognized for his pioneering work in the field of speech coding. In addition to the '580 Patent, Dr. Atal has received 15 other U.S. Patents and numerous foreign patents. Throughout his career, he has published

more than 90 technical works documenting his research, and his works have been cited more than 800 times by others. In recognition for his distinguished and continuing achievements in original research, Dr. Atal was elected to the National Academy of Engineering and the National Academy of Sciences, each of which is considered one of the highest honors that can be accorded a scientist or engineer. He is also a recipient of the Institute of Electrical and Electronics Engineers' Signal Processing Society Award and Centennial Medal. In 1994, Dr. Atal received the Thomas Alva Edison Award. In 1996, Dr. Atal was named an AT&T Fellow. Presently, Dr. Atal is a Technology Director at the AT&T Shannon Labs in Florham Park, New Jersey.

12. Dr. Atal's and Mr. Remde's work on speech coding as claimed in the '580 Patent has been incorporated into several industry standards in the communications field including, but not limited to, International Telecommunication Union ("ITU") Recommendations G.723, G.723.1, G.728, and G.729. The ITU is an administrative entity that establishes and administers standards.

13. Dr. Atal and Mr. Remde filed the original application that led to the issuance of the '580 Patent on December 1, 1981. To date, many companies have taken licenses from AT&T under the '580 Patent.

Speech Coding Technology in Microsoft Products

14. Microsoft has incorporated speech coding technology into a number of its products by including speech codecs as a component of some of its products. A speech codec is a software program that is capable of coding -- converting a speech signal into a more compact code -- and decoding -- converting the more compact code back into a signal that sounds like the original speech signal.

15. Some Microsoft products include multiple speech codecs. For instance, Windows® 95, a Microsoft computer

operating system, includes a number of speech codecs including the DSP Group TrueSpeech® Software CODEC ("the TrueSpeech® CODEC"), and the Microsoft G.723.1 CODEC.

16. Once a speech signal is coded with one particular speech codec, it can only be decoded by using the same codec. For instance, one application in the Windows® 95 operating system that uses speech codecs is the Sound Recorder application. The Sound Recorder application is similar to a tape recorder, and is capable of recording speech. By speaking into a microphone attached to a computer and selecting a Record button on the screen, a user may record speech. To reduce the size of the resulting file, the user may employ a speech codec, such as the TrueSpeech® CODEC, to convert the resulting file into a more compact code. The code can be stored on a computer's hard drive for later use. To play back the resulting file using the Sound Recorder application, the user must employ the TrueSpeech® CODEC to convert the code back into speech.

17. Another Microsoft product that employs speech codecs is Microsoft's NetMeeting® video teleconferencing software. Microsoft has incorporated the NetMeeting® software in certain editions of its Windows® operating systems. Microsoft has also distributed the NetMeeting® software through its Web site for users of Windows® 95, Windows® 98, and Windows NT®. *See* Microsoft Corporation, *Windows NetMeeting 3.01 for Windows 95, Windows 98, and Windows NT 4.0, available at* http://www.microsoft.com/windows/netmeeting/download/nm301x86.asp (last updated March 18, 1999) (attached as Exhibit B).

18. The NetMeeting® software permits users to hold audio and video conferences over the Internet, allowing users to have face to face conversations. The NetMeeting® software uses the Microsoft G.723.1 CODEC. For two individuals to talk to each other over the Internet using the Net-

Meeting® software, they must each operate a computer, which is connected to the Internet and installed with the NetMeeting® software. To transmit speech, the first individual speaks into a microphone attached to her computer. The NetMeeting® software on the first individual's computer uses the Microsoft G.723.1 CODEC to convert the speech into a code. The NetMeeting® software on the first individual's computer transmits the code across the Internet to the second individual's computer. The NetMeeting® software on the second individual's computer decodes the codes into speech for the second individual to hear, again using the Microsoft G.723.1 CODEC.

19. AT&T identified the Microsoft products identified in paragraphs 15 - 18, above, and 20 - 40, below, from publicly available information including the use of a standard or recommendation in the name of a product, statements made by Microsoft, and information available in patents and publications. The operation of a speech codec cannot be readily observed through examination of the speech codec itself or a computer running the speech codec. One method commonly used to ascertain the operation of a software program, such as a speech codec, is the examination of source code and other proprietary technical documents. Because the relevant source code and other proprietary technical documents are believed to be kept confidential, AT&T is unable to determine if other products infringe the '580 Patent without further discovery.

Microsoft has Refused AT&T's Offer to License

20. In April 1999, AT&T notified Microsoft that it was infringing the '580 Patent. Since April 1999, AT&T and Microsoft have participated in licensing discussions regarding the '580 Patent ("the Licensing Discussions"). These discussions resulted in AT&T's offering Microsoft a license under the '580 Patent. To date, Microsoft has refused AT&T's offer.

The TrueSpeech® CODEC

21. The TrueSpeech® CODEC, a subject matter of the Licensing Discussions, was developed by DSP Group, Inc. DSP Group, Inc. is not licensed under the '580 Patent.

22. On information and belief, the TrueSpeech® CODEC is described in U.S. Pat. No. 5,673,364, which issued to Leon Bialik ("the Bialik Patent"), and U.S. Application Serial No. 08/160,530 ("the Bialik Application"), the patent application that issued as the Bialik Patent.

23. On information and belief, the TrueSpeech® CODEC is also described in a paper entitled "TrueSpeech™ Algorithm Description" by Sandra Huang ("the Huang Paper"). A copy of the Huang Paper is attached as Exhibit C.

24. After gaining knowledge of the Bialik Patent, the Bialik Application, and the Huang Paper, AT&T informed Microsoft that the TrueSpeech® Software CODEC infringed the '580 Patent.

25. The following Microsoft products have incorporated and/or supported the TrueSpeech® CODEC: Windows® 95, Windows® 98, Windows® 98 Second Edition, Windows® 2000, Windows NT®, Windows Mc™, Windows XP Home Edition, Windows XP Professional operating systems (collectively the "Windows Operating System Products"), NetShow, DirectX, and Cordless Phone System.

The Standard Compliant CODECs Distributed by Microsoft

26. The Microsoft G.723.1 CODEC, the VivoActive G.723.1 CODEC, the VivoActive G.723 Decoder, and the Intel G.723.1 CODEC are voice codecs.

27. ITU Recommendations G.723, G.723.1, G.728, and G.729 were subject matters of the Licensing Discussions.

28. The '580 Patent is necessary to practice ITU Recommendations G.723, G.723.1, G.728, and G.729. Pursuant

to ITU policy, AT&T informed the ITU of this fact through written statements around the time these standards were adopted and offered to negotiate licenses under the '580 Patent on a non-discriminatory basis and on reasonable terms and conditions.

29. On information and belief, Microsoft became aware of the statements referenced in paragraph 28 above.

30. On information and belief, the Microsoft G.723.1 CODEC, the VivoActive G.723.1 CODEC, VivoActive G.723 Decoder, and the Intel G.723.1 CODEC comply with ITU Recommendation G.723.1.

31. The following Microsoft products have incorporated and/or supported the Microsoft G.723.1 CODEC: the Windows Operating System Products and the NetMeeting® software.

32. The following Microsoft products have incorporated and/or supported the VivoActive G.723.1 CODEC: Windows XP Professional, Microsoft Windows Media Player for Windows XP Home Edition, Microsoft Windows Media Player for Windows XP Professional.

33. The following Microsoft products have incorporated and/or supported the VivoActive G.723 Decoder: Windows Media Player for Mac.

34. The following Microsoft products have incorporated and/or supported the Intel G.723.1 CODEC: NetShow 2.0 and NetMeeting 2.0.

The Standard Compliant Products Sold by Microsoft

35. The Microsoft Exchange 2000 Conferencing Server, Microsoft Internet Security and Acceleration Server 2000, and the Telephony Application Programming Interface ("TAPI") of Windows 2000 Professional are products that support ITU Recommendation H.323.

36. On information and belief, the Microsoft Exchange 2000 Conferencing Server supports ITU Recommendation G.723.1.

37. On information and belief, the Microsoft Internet Security and Acceleration Server 2000 supports ITU Recommendation G.723.1.

38. On information and belief, the TAPI of Windows 2000 Professional supports ITU Recommendation G.723.1.

39. On information and belief, Windows Messenger supports ITU Recommendation G.723.

40. On information and belief, the Windows Real-Time Communication client of Windows XP ("Windows RTC Client") supports ITU Recommendation G.723.

COUNT – PATENT INFRINGEMENT

41. AT&T realleges and incorporates herein by this reference paragraphs 1 through 40 of this Complaint as though fully set forth herein.

42. AT&T is the sole owner of the entire right, title, and interest in the '580 Patent.

43. The claims of the '580 Patent relate to a technique known as multipulse speech coding.

44. Microsoft has directly and contributorily infringed, and has induced others to infringe, one or more claims of the '580 Patent by making, using, offering to sell, and/or selling within the United States various multipulse speech coding products including, but not limited to, the following:

(i) products that have incorporated and/or supported the TrueSpeech® CODEC including the products listed in paragraph 25;

(ii) products that have incorporated and/or supported the Microsoft G.723.1 CODEC including the products listed in paragraph 31;

(iii) products that have incorporated and/or supported the VivoActive G.723.1 CODEC including the products listed in paragraph 32;

(iv) products that have incorporated and/or supported the VivoActive G.723 Decoder including the products listed in paragraph 33;

(v) products that have incorporated and/or supported the Intel G.723.1 CODEC including the products listed in paragraph 34;

(vi) the Microsoft Exchange 2000 Conferencing Server;

(vii) the Microsoft Internet Security and Acceleration Server 2000;

(viii) the TAPI of Windows 2000;

(ix) the Windows Messenger; and

(x) the Windows RTC Client.

45. Microsoft's infringement has been willful.

REQUEST FOR RELIEF

WHEREFORE, AT&T requests the following relief:

A. a judgment holding Microsoft liable for infringement of the '580 Patent;

B. an accounting for damages resulting from Microsoft's infringement of the '580 Patent, together with prejudgement and post-judgment interest;

C. a judgment holding that Microsoft's infringement of the '580 Patent is willful, and a trebling of damages pursuant to Title 35 United States Code, § 284;

D. a judgment holding this Action an exceptional case, and an award to AT&T for its attorneys' fees and costs pursuant to Title 35 United States Code, § 285; and

E. such other relief as the Court deems just and equitable.

New York, New York

Dated: February 19, 2002

/s/

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Of Counsel

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

AT&T CORPORATION,

01 Civ. 4872 (WHP)

Plaintiff,

v.

MICROSOFT CORPORATION,

Defendant.

December 12, 2003
12:20 pm

* * *

[Page 13, line 24 to Page 17, line 18]

THE COURT Let me sort of follow up on a point that you made. Microsoft acknowledges that its export of this software is with the intent that foreign OEM's will eventually combine that software into foreign-made computers.

The Federal Circuit has said that 271 (f)(2), and I am quoting now from Waymark, "Does not require an actual combination of the components but only a showing that the infringer shipped them with the intent that they be combined."

Under the Federal Circuit statement in Waymark, isn't Microsoft's argument that foreign replication of the software abroad exempts Microsoft from 271 (f) infringement liability diminished since it had the intent for the software to be eventually incorporated abroad into the foreign computers?

MR. CULBERT: I think the short answer is no, because again you have to look at what it is that is part of those foreign computers.

If you think of software in the abstract, just in the abstract, then you could imagine how shipping a disk with the intent to have it replicated and then distributed could give rise to in some theoretical basis, we therefore supplied millions, hundreds of millions of versions of that software overseas.

That is only true if you think of it purely in the abstract, but what the Bear case from this August teaches us is that information alone, just information is not something that can give rise to 271 (f) liability. That is something in an abstract sense, that is all the software is. It is like a mold in that sense.

It is our intent that that mold be used overseas to replicate overseas many, many versions, but the mold is just one and it is just information. It is not itself a physical component. If you ask the question, pick a Sony laptop made in Sony from our golden master. You're sitting in Japan and you're looking at that and you ask the question, what is it in this laptop that came from the United States?

If you ask the question is there anything physical in this laptop that came from the United States, the answer will be no. It is entirely manufactured overseas. The only thing in that laptop that came from the U.S. in a sense, in an abstract sense, is Windows, but Windows as a theoretical construct, not something physical.

That would be true not just for software, but it would be true for pharmaceuticals, it would be true for -- take a biotech product, a cell line. The cell gets created, the intellectual property work gets created in the U.S., shipped overseas with the intent to replicate overseas, with the intent to make the exact replicas overseas, millions of exact replicas from that

original cell line that was devised here. Again, there is no 271 (f) liability for those replicas because there is no physical component part of those replicas that was supplied from the United States.

THE COURT Would Microsoft acknowledge that the transfer from the United States to some foreign manufacturer overseas of a golden master constitute a single infringement?

MR. CULBERT: And that is an unfortunate situation where the facts of this case or any particular case actually get in the way because to have an infringement, for example, in this case, you might need a microphone or you might need something else, it is more than just the disk. So I think that is, in this case, it might be an easy answer to that question because the easy answer in this case might be no.

THE COURT If they ship the disk as opposed to making a golden master, if they ship a disk for every unit that is going to be manufactured overseas, what is Microsoft's position?

MR. CULBERT: 271 (f) liability could very well attach, and that is exactly our point. If the manufacturing take place in the U.S. and then goes from the U.S. in its supply overseas, then there could be 271 (f) liability.

That is what the Deep South case was all about. That is why Congress enacted the statute in the first place. If you take a look at the cases that the parties have cited, with two exceptions, virtually every case supports that result.

Take the principal case relied on by AT&T, the software case. Look at the facts there. In that case, the software was created in England by a company called Harlequin. There was another defendant in the case, ECRM, which is a Delaware company, which made I think called Image Setters or something, a half toning invention. The English software was shipped over to Delaware, apparently on the facts of that

case, shipped over to Delaware, incorporated into an apparatus in Delaware which was then shipped all over the world.

The software, the intellectual property, the type of stuff that Microsoft does, that was done in England. There is nothing in that case to suggest there was anything like a golden master of just the software sent from the U.S. overseas for replication overseas. It is almost a mirror image of our case and frankly supports our view, which is that if the manufacturing takes place here, then 271 (f) can apply.

The W.R. Grace case is another example that we think is a correct statement of the law. W.R. Grace, there are multiple versions of the components of an ultimately infringing chemical compound. Those components are made here, supplied overseas. The combination takes place overseas. There is 271 (f) liability.

* * *

Microsoft® Windows® 2000 OEM Preinstallation Kit (OPK) User's Guide Excerpt

* * *

[Page 16]

Before You Begin

When you plan the preinstallation process, be sure that you fully agree to and comply with the business and legal requirements and restrictions of Microsoft. For a complete description of these requirements, see Chapter 1 or refer to your license agreement.

Before you begin the preinstallation process, read all of this *OEM Preinstallation Kit (OPK) User's Guide.* You should also read Relnotes.txt and Read1st.txt, located on the Microsoft Windows 2000 OPK Tools CD and the Windows 2000 product CDs, respectively. Also, check all the hardware you plan to preinstall against the Hardware Compatability List (HCL). For the most up-to-date list of supported hardware, see the Hardware Compatability List at the Microsoft Web site (**http://www.microsoft.com/**). Your Windows 2000 CD includes a copy of this list (*drive*:\Support\Hcl.txt) that was accurate as of the date Windows 2000 was released.

In addition, make sure you have the following items:

- **Master/Reference computer.** For information about the master or reference computers, see Chapters 5, 7, and 8, and the Glossary. Depending on the preinstallation method you choose, the master computer may be optional.
- **Destination computers.** These are the computers on which you preinstall Windows 2000 and that you then ship to users.

- **Network. (Optional)** If you are using the network transfer method to preinstall multiple computers from a distribution server, you must be connected to a network.
- **Disk-duplicating equipment or software. (Optional)** If you are using the disk-duplicating or Syspart method to copy the preinstallation master to destination computers, you need third-party disk-duplicating software or hardware.
- **Additional components.** Any hardware, drivers, applications, and so on that you want to preinstall.
- **Your company's support information.** This information must be included in the online support documentation.
- **Help files. (Optional)** Any topics you want to add to Windows 2000 Help.
- **Your company's logo. (Optional)** A copy of your company's logo in bitmap (.bmp) format.
- ***Microsoft Windows 2000 Device Driver Kit.* (Optional)** The DDK provides utilities to write or modify third-party drivers or .inf files.

* * *

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

AT&T Corp.

Plaintiff,

v.

MICROSOFT CORPORATION

Defendant.

01 Civ. 4872 (WHP)

STIPULATED STATEMENT OF FACTS CONCERNING 35 U.S.C. § 271(F)

COURT'S EXHIBIT 1

The parties hereby stipulate to the following facts concerning the issue of infringement pursuant to 35 U.S.C. § 271(f):

1. Plaintiff AT&T Corp. ("AT&T") owns all right, title, and interest in and to United States Patent Number Reissue 32,580 entitled "Digital Speech Coder" (the "'580 Patent");

2. On June 4, 2001, AT&T filed a complaint against defendant Microsoft Corporation ("Microsoft") in the United States District Court for the Southern District of New York ("District Court"), seeking a judgment that Microsoft has infringed the '580 Patent under 35 U.S.C. § 271 and seeking damages for such infringement (the "Dispute");

3. AT&T has alleged that Microsoft's foreign sales constitute acts of infringement under 35 U.S.C. § 271(f) and the District Court has entered summary

judgment that Microsoft's foreign sales are subject to liability in accordance with AT&T's allegation (the "271(f) Ruling");

4. Microsoft conceives, writes, compiles, tests, debugs and creates a master version of its Windows operating system software in Redmond, Washington. Microsoft makes a limited number of "golden master" disks in the United States on which the machine-readable object code for the Windows operating system software is stored;

5. Some golden master disks are shipped abroad to foreign computer manufacturers, known as foreign "original equipment manufacturers" or "OEMs." Pursuant to licensing agreements with Microsoft, those foreign OEMs use the golden master disks to install the foreign-made copies of Windows operating system software onto computers. Each OEM receives a single golden master disk, and that disk itself is never installed on a computer that is then sold. Instead, that golden master disk is used by the OEM to obtain and then replicate object code that is then installed on computers that are sold;

6. Microsoft also ships golden master disks to Microsoft authorized foreign "replicators" who make copies of the Windows operating system software object code and ship those foreign manufactured copies to foreign computer manufacturers;

7. Microsoft also supplies its Windows operating system object code from the United States to certain foreign OEMs and authorized foreign replicators by sending to foreign OEMs or replicators a single encrypted transmission of the object code. The foreign OEMs and replicators decrypt the transmission and install copies of the object code for the Windows operating system software onto computer

hardware, to form computer systems, and optionally create CDs or other media with a copy of the same;

8. During the time relevant for this lawsuit, the golden master disks that Microsoft shipped overseas and foreign electronic transmissions included copies of the codecs that AT&T accused of infringing the '580 patent;

9. Microsoft intends that the foreign OEMs and authorized replicators make the copies of the object code for the Windows operating system (created from the golden master disks and/or electronically transmitted software code) and Microsoft further intends that the foreign OEMs and authorized replicators install those copies onto computer hardware. This computer hardware is manufactured overseas; the computer systems are assembled and the completed systems are then sold to end-users overseas.

10. AT&T alleges, and Microsoft disputes, that the "golden master disks" and the encrypted transmissions of Windows object code constitute "components" within the meaning of 35 U.S.C. 271(f). AT&T alleges, and Microsoft disputes, that the computer systems assembled abroad with the foreign replicated object code contain "components" that were supplied by Microsoft from the United States. In a ruling announced on February 17, 2004, the District Court ruled in favor of AT&T on this issue. The parties agree that, other than the "golden master disks" and the encrypted transmissions of Windows object code, Microsoft does not supply any "component" from the United States for assembly abroad.

11. The District Court ruled in favor of AT&T on all 271(f) issues in an opinion dated March 5th, 2004.

AT&T and Microsoft have entered into a confidential settlement agreement pursuant to which Microsoft has agreed to pay damages to AT&T in connection with AT&T's allegations that Microsoft's United States sales infringe the '580 patent. The settlement agreement obligates Microsoft to make an additional payment of damages to AT&T in the event that the District Court's 271(f) ruling is affirmed on appeal.

/s/
William H. Pauley III, District Judge

/s/
AT&T Corp.

/s/
MICROSOFT CORPORATION

Microsoft Computer Dictionary (5th ed. 2002)

* * *

[pg. 116]

component *n.* 1. A discrete part of a larger system or structure. 2. An individual modular software routine that has been compiled and dynamically linked, and is ready to use with other components or programs. * * *

FILED
DEC 15 2006
OFFICE OF THE CLERK
SUPREME COURT, U.S.

(28)

No. 05-1056

IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

SUPPLEMENTAL JOINT APPENDIX

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PETITION FOR WRIT OF CERTIORARI FILED FEBRUARY 17, 2006
CERTIORARI GRANTED OCTOBER 27, 2006

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United States Patent [19]

Atal et al.

[11] E **Patent Number: Re. 32,580**

[45] **Reissued Date of Patent: Jan. 19, 1988**

[54] **DIGITAL SPEECH CODER**

[75] Inventors: **Bishnu S. Atal, New Providence; Joel R. Remde, Elizabeth, both of N.J.**

[73] Assignee: **American Telephone and Telegraph Company, AT&T Bell Laboratories, Murray Hill, N.J.**

[21] Appl. No.: **909,319**

[22] Filed: **Sep. 18, 1986**

Related U.S. Patent Documents

Reissue of:

[64] Patent No.: **4,472,832**
Issued: **Sep. 18, 1984**
Appl. No.: **326,371**
Filed: **Dec. 1, 1981**

[51] Int. Cl.[4] **G10L 5/00**

[52] U.S. Cl. **381/40**

[58] Field of Search 381/29–40, 381/49; 364/513.5

[56] **References Cited**

U.S. PATENT DOCUMENTS

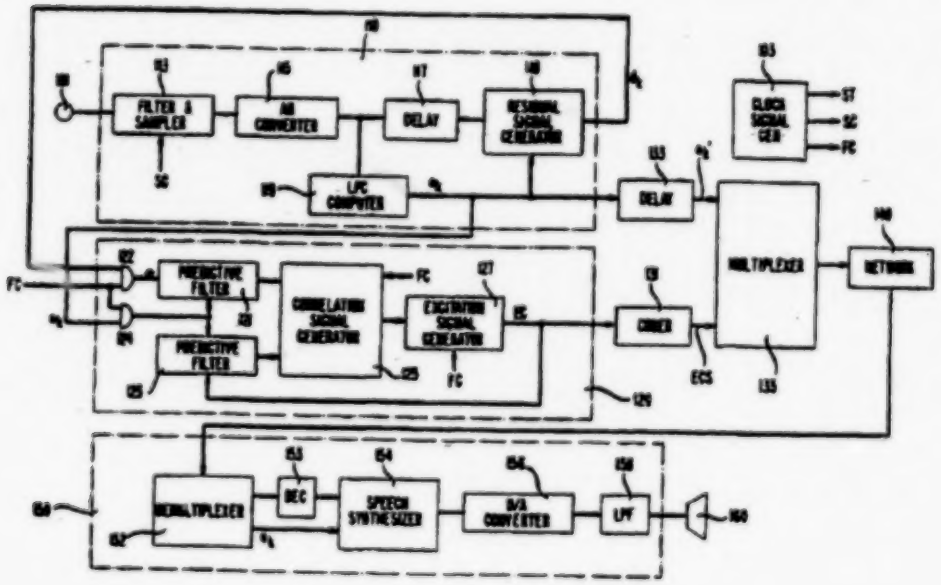
3,624,302	11/1971	Atal	364/513.5
3,740,476	6/1973	Atal	381/49
4,130,729	12/1978	Gagnon	381/30
4,133,976	1/1979	Atal et al.	364/513.5 X
4,140,876	2/1979	Gagnon	381/33
4,184,049	1/1980	Crochier et al.	381/37

Primary Examiner—E. S. Matt Kemeny
Attorney, Agent, or Firm—Jack S. Cubert

[57] **ABSTRACT**

An improved speech analysis and synthesis system wherein LPC parameters and a modified residual signal for excitation is transmitted: the excitation signal is the cross correlation of the residual signal and the LPC-recreated original signal.

43 Claims, 7 Drawing Figures



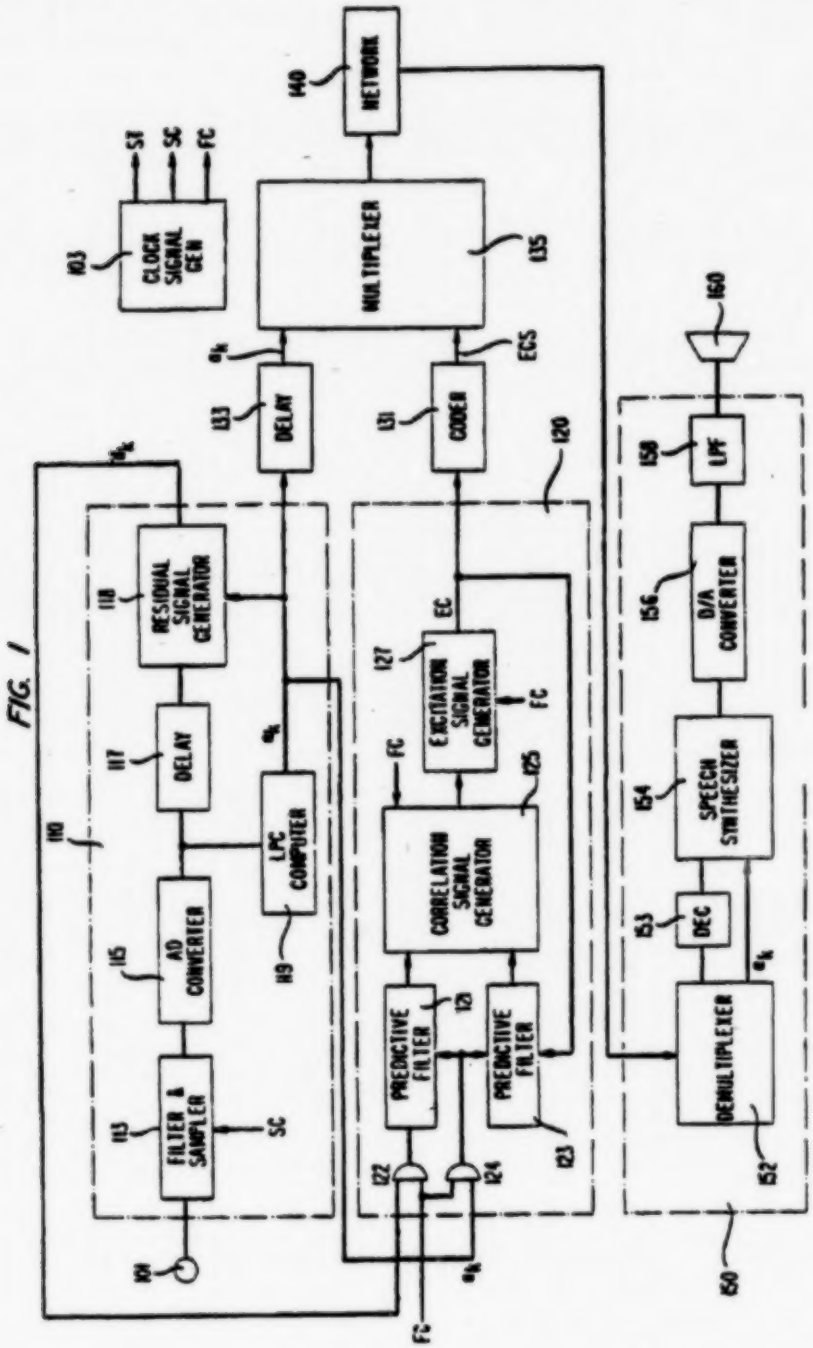

NETWORK
140
MULTIPLEXER
135
CLOCK SIGNAL GEN
103
ST
SC
FC
DELAY
133
CODER
131
ECS
120
RESIDUAL SIGNAL GENERATOR
118
DELAY
117
AD CONVERTER
115
FILTER & SAMPLER
113
SC
LPC COMPUTER
119
110
101
EXCITATION SIGNAL GENERATOR
127
EC
FC
CORRELATION SIGNAL GENERATOR
125
PREDICTIVE FILTER
121
PREDICTIVE FILTER
123
122
124
LPF
158
D/A CONVERTER
156
SPEECH SYNTHESIZER
154
DEC
153
DEMULTIPLEXER
152
150
160

FIG. 1

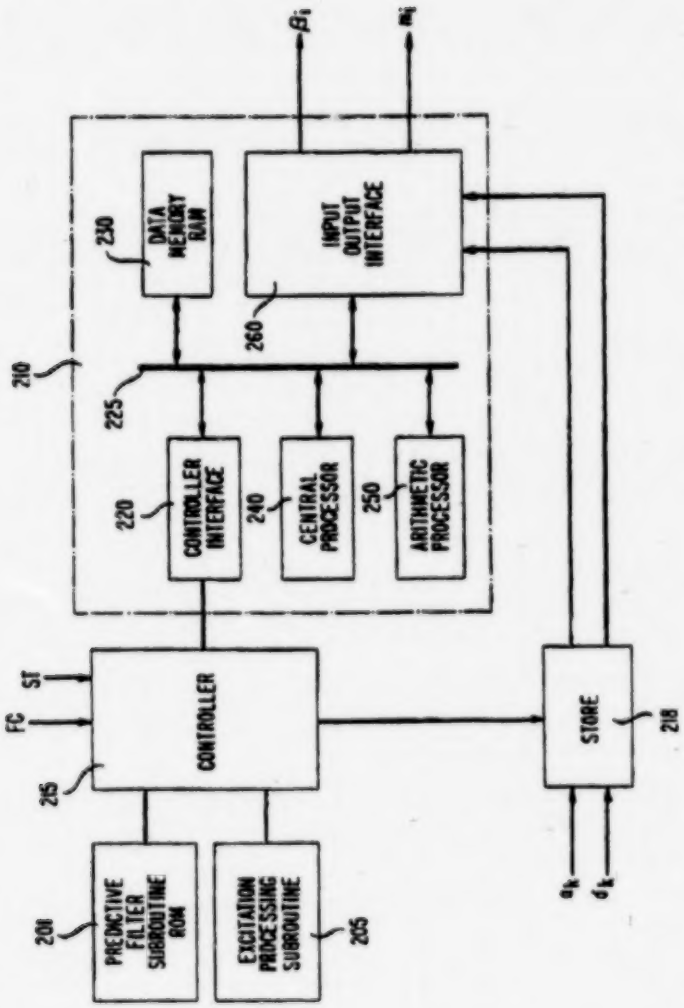

DATA MEMORY RAM
230
INPUT OUTPUT INTERFACE
260
210
225
CONTROLLER INTERFACE
220
CENTRAL PROCESSOR
240
ARITHMETIC PROCESSOR
250
CONTROLLER
215
ST
FC
STORE
218
PREDICTIVE FILTER SUBROUTINE ROM
201
EXCITATION PROCESSING SUBROUTINE
205

FIG. 2

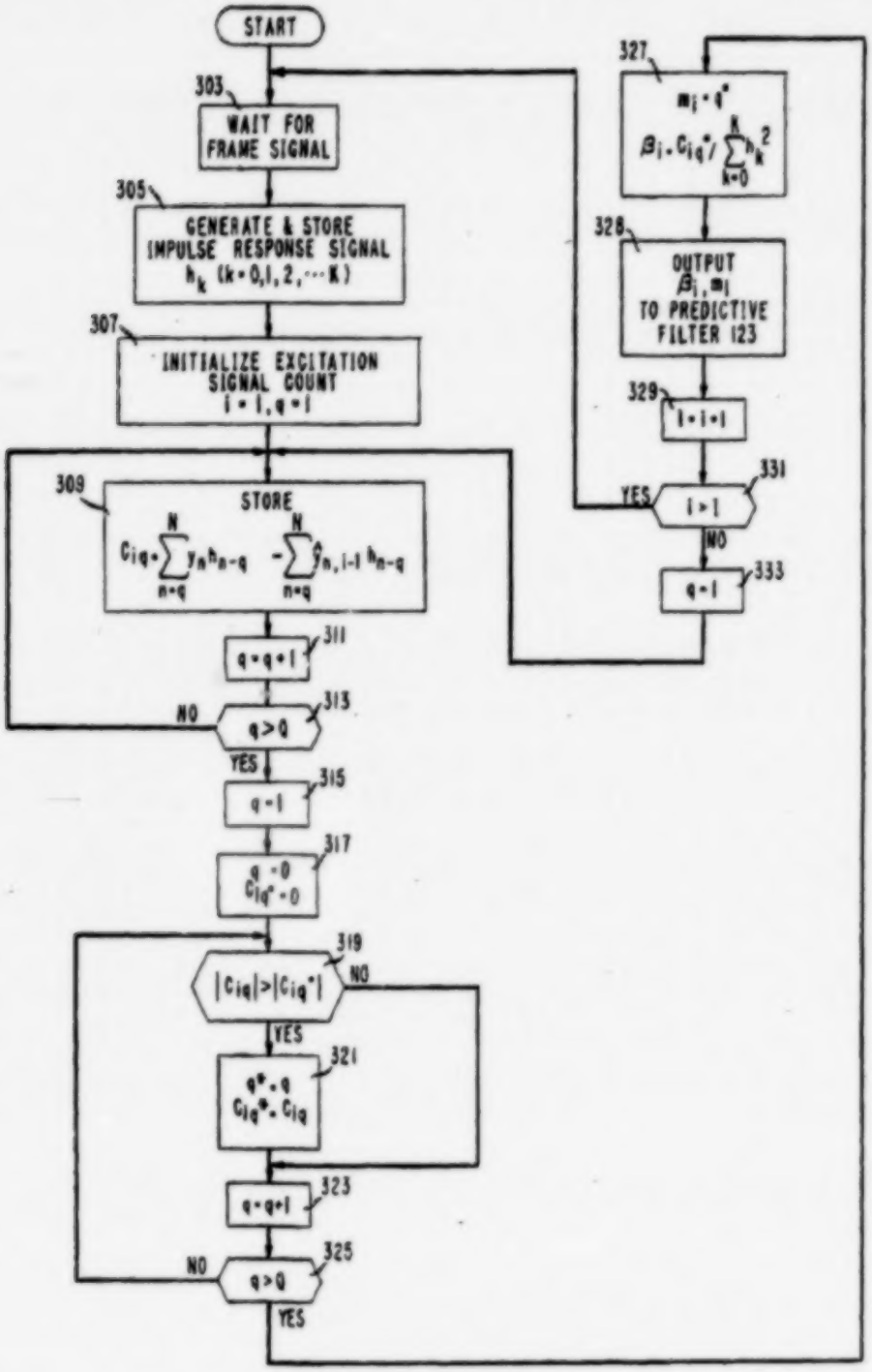

START
303
WAIT FOR FRAME SIGNAL
305
GENERATE & STORE IMPULSE RESPONSE SIGNAL h_k (k=0,1,2,···K)
307
INITIALIZE EXCITATION SIGNAL COUNT i=1, q=1
309
STORE $C_{iq}=\sum_{n=q}^{N} y_n h_{n-q} - \sum_{n=q}^{N} \hat{y}_{n,i-1} h_{n-q}$
311
q=q+1
313
q>Q
NO
YES
315
q=1
317
q=0 $C_{iq}^*=0$
319
$|C_{iq}|>|C_{iq}^*|$
NO
YES
321
$q^*=q$ $C_{iq}^*=C_{iq}$
323
q=q+1
325
q>Q
NO
YES
327
$m_i=q^*$ $\beta_i=C_{iq}^*/\sum_{k=0}^{K} h_k^2$
328
OUTPUT β_i, m_i TO PREDICTIVE FILTER 123
329
i=i+1
331
i>I
YES
NO
333
q=1

FIG. 4

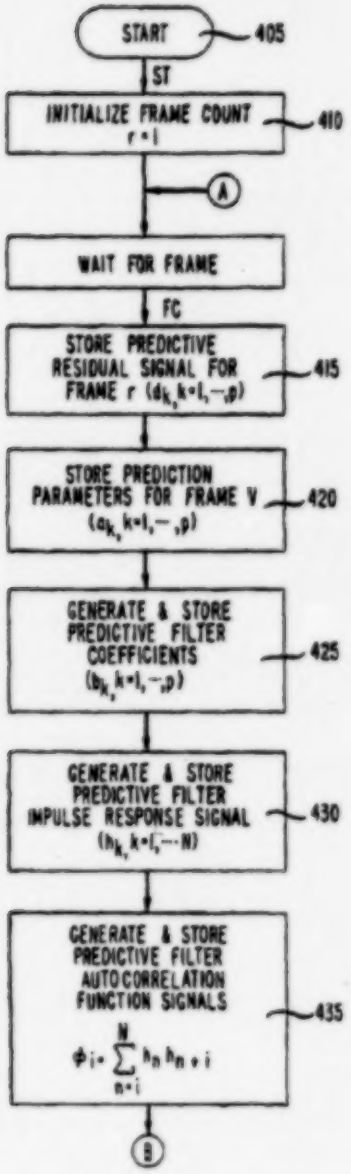
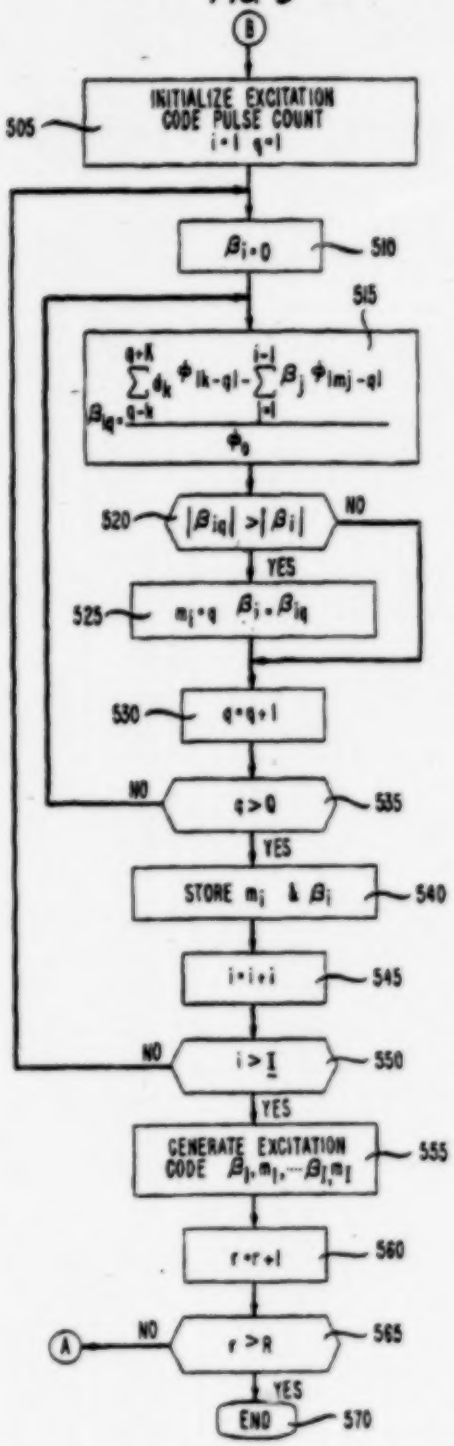

START
405
ST
INITIALIZE FRAME COUNT
r=1
410
A
WAIT FOR FRAME
FC
STORE PREDICTIVE RESIDUAL SIGNAL FOR FRAME r (d_k, k=1,—,p)
415
STORE PREDICTION PARAMETERS FOR FRAME V (a_k, k=1,—,p)
420
GENERATE & STORE PREDICTIVE FILTER COEFFICIENTS (b_k, k=1,—,p)
425
GENERATE & STORE PREDICTIVE FILTER IMPULSE RESPONSE SIGNAL (h_k, k=1,—N)
430
GENERATE & STORE PREDICTIVE FILTER AUTOCORRELATION FUNCTION SIGNALS
$\phi_i = \sum_{n=i}^{N} h_n h_{n-i}$
435
B

FIG. 5


B
INITIALIZE EXCITATION CODE PULSE COUNT
i=1 q=1
505
$\beta_i = 0$
510
515
$\beta_{iq} = \frac{\sum_{q-k}^{q+k} d_k \phi_{|k-q|} - \sum_{i=1}^{i-1} \beta_j \phi_{|mj-q|}}{\phi_0}$
520
$|\beta_{iq}| > |\beta_i|$
NO
YES
525
$m_i = q$ $\beta_i = \beta_{iq}$
530
q=q+1
NO
q>0
535
YES
STORE m_i & β_i
540
i=i+1
545
NO
i>I
550
YES
GENERATE EXCITATION CODE $\beta_1, m_1, \cdots \beta_I, m_I$
555
r=r+1
560
A
NO
r>R
565
YES
END
570

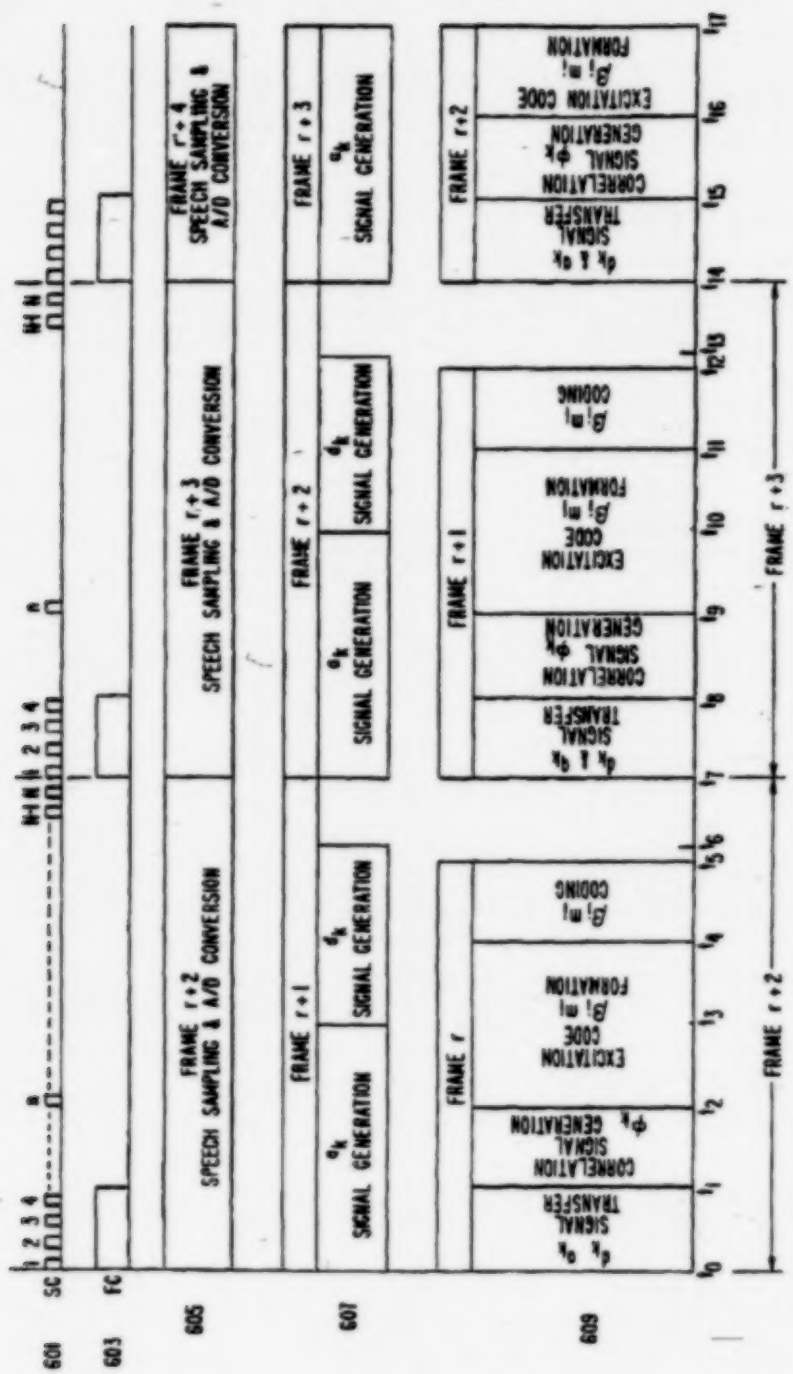
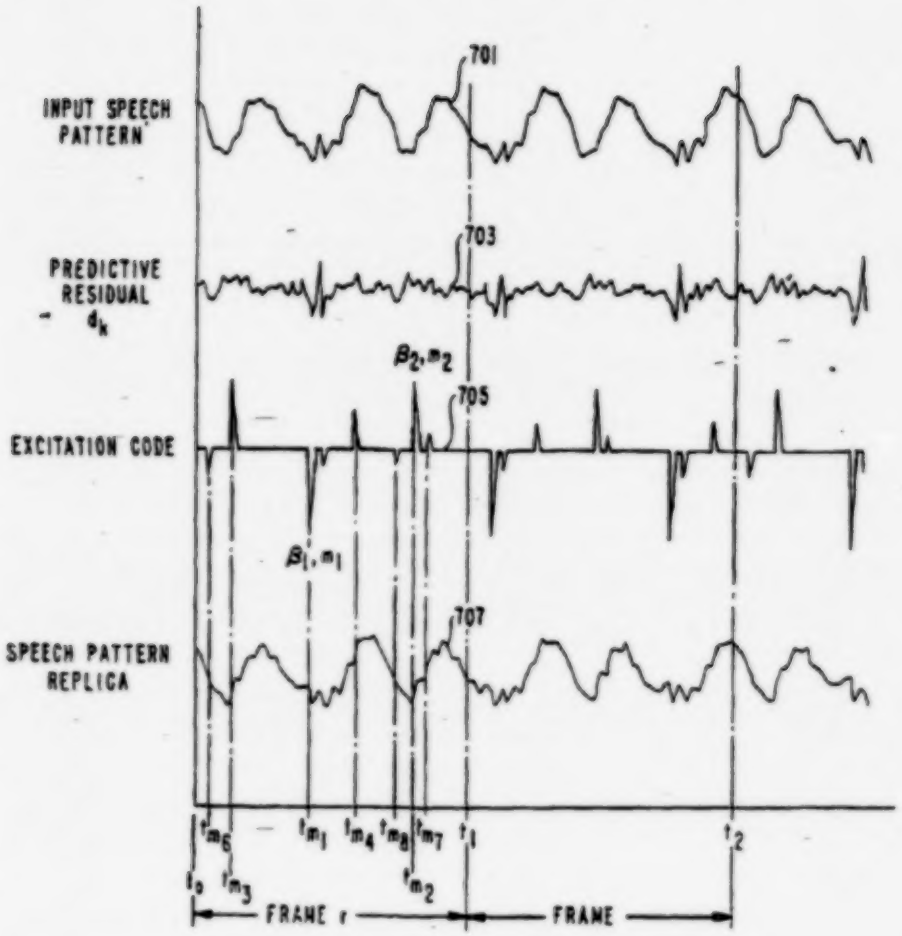

601
SC
1 2 3 4
n
603
FC
605
FRAME r+2
SPEECH SAMPLING & A/D CONVERSION
FRAME r+3
SPEECH SAMPLING & A/D CONVERSION
FRAME r+4
SPEECH SAMPLING & A/D CONVERSION
607
FRAME r+1
SIGNAL GENERATION
FRAME r+2
SIGNAL GENERATION
FRAME r+3
SIGNAL GENERATION
609
FRAME r
SIGNAL TRANSFER
CORRELATION SIGNAL GENERATION
EXCITATION CODE FORMATION
CODING
FRAME r+1
SIGNAL TRANSFER
CORRELATION SIGNAL GENERATION
EXCITATION CODE FORMATION
CODING
FRAME r+2
SIGNAL TRANSFER
CORRELATION SIGNAL GENERATION
EXCITATION CODE FORMATION
FRAME r+2
FRAME r+3

FIG. 6

FIG. 7


INPUT SPEECH PATTERN
701
PREDICTIVE RESIDUAL d_k
703
β_2, m_2
705
EXCITATION CODE
β_1, m_1
SPEECH PATTERN REPLICA
707
t_{m_6}
t_{m_1}
t_{m_4}
t_{m_8}
t_{m_7}
t_1
t_2
t_0
t_{m_3}
t_{m_2}
FRAME
FRAME

DIGITAL SPEECH CODER

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

Our invention relates to speech processing and more particularly to digital speech coding arrangements.

Digital speech communication systems including voice storage and voice response facilities utilize signal compression to reduce the bit rate needed for storage and/or transmission. As is well known in the art, a speech pattern contains redundancies that are not essential to its apparent quality. Removal of redundant components of the speech pattern significantly lowers the number of digital codes required to construct a replica of the speech. The subjective quality of the speech replica, however, is dependent on the compression and coding techniques.

One well known digital speech coding system such as disclosed in U.S. Pat. No. 3,624,302 issued Nov. 30, 1971 includes linear prediction analysis of an input speech signal. The speech signal is partitioned into successive intervals and a set of parameters representative of the interval speech is generated. The parameter set includes linear prediction coefficient signals representative of the spectral envelope of the speech in the interval, and pitch and voicing signals corresponding to the speech excitation. These parameter signals may be encoded at a much lower bit rate than the speech signal waveform itself. A replica of the input speech signal is formed from the parameter signal codes by synthesis. The synthesizer arrangement generally comprises a model of the vocal tract in which the excitation pulses are modified by the spectral envelope representative prediction coefficients in an all pole predictive filter.

The foregoing pitch excited linear predictive coding is very efficient. The produced speech replica, however, exhibits a synthetic quality that is often difficult to understand. In general, the low speech quality results from the lack of correspondence between the speech pattern and the linear prediction model used. Errors in the pitch code or errors in determining whether a speech interval is voiced or unvoiced cause the speech replica to sound disturbed or unnatural. Similar problems are also evident in formant coding of speech. Alternative coding arrangements in which the speech excitation is obtained from the residual after prediction, e.g., ADPCM or APC, provide a marked improvement because the excitation is not dependent upon an inexact model. The excitation bit rate of these systems, however, is at least an order of magnitude higher than the linear predictive model. Attempts to lower the excitation bit rate in the residual type systems have generally resulted in a substantial loss in quality. It is an object of the invention to provide improved speech coding of high quality at lower bit rates than residual coding schemes.

BRIEF SUMMARY OF THE INVENTION

We have found that the foregoing residual encoding problems may be solved by forming a pattern predictive of a pattern (e.g. speech pattern) to be encoded and comparing the pattern to be encoded with the predictive pattern on a frame by frame basis. The differences between the pattern to be encoded and the predictive pattern over each frame are utilized to form a coded signal of a prescribed format which coded signal modifies the predictive pattern to minimize the frame differences. The bit rate of the prescribed format coded signal is selected so that the modified predictive pattern approximates the speech pattern to a desired level consistent with coding requirements.

The invention is directed to a sequential pattern processing arrangement in which the sequential pattern is partitioned into successive time intervals. In each time interval, a set of signals representative of the interval sequential pattern and a signal representative of the differences between the interval sequential pattern and the interval representative signal set are generated. A first signal corresponding to the interval pattern is formed responsive to said interval pattern representative signals and said interval differences representative signal and a second interval corresponding signal is generated responsive to said interval pattern representative signals. A signal corresponding to the differences between the first and second interval corresponding signals is formed and a third signal is produced responsive to said interval differences corresponding signal that alters the second signal to reduce the differences between said first and second interval corresponding signals.

According to one aspect of the invention, a speech pattern is partitioned into successive time intervals. In each interval, a set of signals representative of the speech pattern in each time interval and a signal representative of the differences between said interval speech pattern and the interval speech pattern representative signal set are generated. A first signal corresponding to the interval speech pattern is formed responsive to said interval speech representative signals and differences representative signal and a second interval corresponding signal is generated responsive to the interval speech pattern representative signals. A signal corresponding to the differences between the first and second interval representative signals is formed and a third signal is produced responsive to the interval differences corresponding signal that alters said second interval corresponding signal to reduce the differences corresponding signal.

According to another aspect of the invention, the third signal is utilized to construct a replica of the interval pattern.

In an embodiment of the invention, a set of predictive parameter signals is generated for each time frame from a speech signal. A prediction residual signal is formed responsive to the time frame speech signal and the time frame predictive parameters. The prediction residual signal is passed through a first predictive filter to produce a first speech representative signal for the time frame. An second speech representative signal is generated for the time frame in a second predictive filter from the frame prediction parameters. Responsive to the first speech representative and second speech representative signals of the time frame, a coded excitation signal is formed and applied to the second predictive filter to minimize the perceptually weighted mean squared difference between the frame first and second speech representative signals. The coded excitation signal and the predictive parameter signals are utilized to construct a replica of the time frame speech pattern.

DESCRIPTION OF THE DRAWING

FIG. 1 depicts a block diagram of a speech processor circuit illustrative of the invention;

FIG. 2 depicts a block diagram of an excitation signal forming processor that may be used in the circuit of FIG. 1;

FIG. 3 shows a flow chart that illustrates the operation of the excitation signal forming circuit of FIG. 1;

FIGS. 4 and 5 show flow charts that illustrate the operation of the circuit of FIG. 2;

FIG. 6 shows a timing diagram that is illustrative of the operation of the excitation signal forming circuit of FIG. 1 and of FIG. 2; and

FIG. 7 shows waveforms illustrating the speech processing of the invention.

DETAILED DESCRIPTION

FIG. 1 shows a general block diagram of a speech processor illustrative of the invention. In FIG. 1, a speech pattern such as a spoken message is received by microphone transducer 101. The corresponding analog speech signal therefrom is bandlimited and converted into a sequence of pulse samples in filter and sampler circuit 113 of prediction analyzer 110. The filtering may be arranged to remove frequency components of the speech signal above 4.0 KHz and the sampling may be at an 8.0 KHz rate as is well known in the art. The timing of the samples is controlled by sample clock CL from clock generator 103. Each sample from circuit 113 is transformed into an amplitude representative digital code in analog-to-digital converter 115.

The sequence of speech samples is supplied to predictive parameter computer 119 which is operative, as is well known in the art, to partition the speech signals into 10 to 20 ms intervals and to generate a set of linear prediction coefficient signals $a_k, k = 1,2, \ldots, p$ representative of the predicted short time spectrum of the $N>>p$ speech samples of each interval. The speech samples from A/D converter 115 are delayed in delay 117 to allow time for the formation of signals a_k. The delayed samples are supplied to the input of prediction residual generator 118. The prediction residual generator, as is well known in the art, is responsive to the delayed speech samples and the prediction parameters a_k to form a signal corresponding to the difference therebetween. The formation of the predictive parameters and the prediction residual signal for each frame shown in predictive analyzer 110 may be performed according to the arrangement disclosed in U.S. Pat. No. 3,740,476 issued to B. S. Atal June 19, 1973 and assigned to the same assignee or in other arrangements well known in the art.

While the predictive parameter signals a_k form an efficient representation of the short time speech spectrum, the residual signal generally varies widely from interval to interval and exhibits a high bit rate that is unsuitable for many applications. In the pitch excited vocoder, only the peaks of the residual are transmitted as pitch pulse codes. The resulting quality, however, is generally poor. Waveform 701 of FIG. 7 illustrates a typical speech pattern over two time frames. Waveform 703 shows the predictive residual signal derived from the pattern of waveform 701 and the predictive parameters of the frames. As is readily seen, waveform 703 is relatively complex so that encoding pitch pulses corresponding to peaks therein does not provide an adequate approximation of the predictive residual. In accordance with the invention, excitation code processor 130 receives the residual signal d_k and the prediction parameters a_k of the frame and generates an interval excitation code which has a predetermined number of bit positions. The resulting excitation code shown in waveform 705 exhibits a relatively low bit rate that is constant. A replica of the speech pattern of waveform 701 constructed from the excitation code and the prediction parameters of the frames is shown in waveform 707. As seen by a comparison of waveforms 701 and 707, higher quality speech characteristic of adaptive predictive coding is obtained at much lower bit rates.

The prediction residual signal d_k and the predictive parameter signals a_k for each successive frame are applied from circuit 110 to excitation signal forming circuit 120 at the beginning of the succeeding frame. Circuit 120 is operative to produce a multielement frame excitation code EC having a predetermined number of bit positions for each frame. Each excitation code corresponds to a sequence of $1 \leq l \leq I$ pulses representative of the excitation function of the frame. The amplitude β_l and location m_l of each pulse within the frame is determined in the excitation signal forming circuit so as to permit construction of a replica of the frame speech signal from the excitation signal and the predictive parameter signals of the frame. The β_l and m_l signals are encoded in coder 131 and multiplexed with the prediction parameter signals of the frame in multiplexer 135 to provide a digital signal corresponding to the frame speech pattern.

In excitation signal forming circuit 120, the predictive residual signal d_k and the predictive parameter signals a_k of a frame are supplied to filter 121 via gates 122 and 124, respectively. At the beginning of each frame, frame clock signal FC opens gates 122 and 124 whereby the d_k signals are supplied to filter 121 and the a_k signals are applied to filters 121 and 123. Filter 121 is adapted to modify signal d_k so that the quantizing spectrum of the error signal is concentrated in the formant regions thereof. As disclosed in U.S. Pat. No. 4,133,976 issued to B. S. Atal et al, Jan. 9, 1979 and assigned to the same assignee, this filter arrangement is effective to mask the error in the high signal energy portions of the spectrum.

The transfer function of filter 121 is expressed in z transform notation as

$$H(z) = \frac{1}{1 - B(z)} \tag{1}$$

where $B(z)$ is controlled by the frame predictive parameters a_k.

Predictive filter 123 receives the frame predictive parameter signals from computer 119 and an artificial excitation signal EC from excitation signal processor 127. Filter 123 has the transfer function of Equation 1. Filter 121 forms a weighted frame speech signal y responsive to the predictive residual d_k while filter 123 generates a weighted artificial speech signal $\hat{y}$ responsive to the excitation signal from signal processor 127. Signals y and $\hat{y}$ are correlated in correlation processor 125 which generates a signal E corresponding to the weighted difference therebetween. Signal E is applied to signal processor 127 to adjust the excitation signal EC so that the differences between the weighted speech representative signal from filter 121 and the weighted artificial speech representative signal from filter 123 are reduced.

The excitation signal is a sequence of I (I≦15) pulses. Each pulse has an amplitude β_i and a location m_i. Processor 127 is adapted to successively form the β_i, m_i signals which reduce the differences between the weighted frame speech representative signal from filter 121 and the weighted frame artificial speech representative signal from filter 123. The weighted frame speech representative signal may be expressed as:

$$y_n = \sum_{k=n-k}^{n} d_k h_{n-k} \quad 1 \leq n \leq N \tag{2}$$

and the weighted artificial speech representative signal of the frame may be expressed as

$$\hat{y}_n = \sum_{j=1}^{I} \beta_j h_{n-m_j} \quad 1 \leq n \leq N \tag{3}$$

where h_n is the impulse response of filter 121 or filter 123.

The excitation signal formed in circuit 120 is a coded signal having elements β_i, m_i, $i=1,2,\ldots,I$. Each element represents a pulse in the time frame. β_i is the amplitude of the pulse and m_i is the location of the pulse in the frame. Correlation signal generator circuit 125 is operative to successively generate a correlation signal for each element. Each element may be located at time $1 \leq q \leq Q$ in the time frame. Consequently, the correlation processor circuit forms Q possible candidates for element i in accordance with Equation 4:

$$C_{iq} = \sum_{n=q}^{N} Y_n h_{n-q} - \sum_{n=q}^{N} \hat{y}_{n,i-1} h_{n-q} \tag{4}$$

where

$$\hat{y}_{n,i-1} = \sum_{j=1}^{i-1} \beta_j h_{n-m_j} \tag{5}$$

Excitation signal generator 127 receives the C_{iq} signals from the correlation signal generator circuit, selects the C_{iq} signal having the maximum absolute value and forms the i_{th} element of the coded signal

$$\beta_i = C_{iq^*} / \sum_{k=0}^{K} h_k^2 \tag{6}$$

$$m_i = q^*$$

where q^* is the location of the correlation signal having the maximum absolute value. The index i is incremented to i+1 and signal $\hat{y}_n$ at the output of predictive filter 123 is modified. The process in accordance with Equations 4, 5 and 6 is repeated to form element β_{i+1}, m_{i+1}. After the formation of element β_I, m_I, the signal having elements $\beta_1 m_1$, $\beta_2 m_2$, ..., $\beta_I m_I$ is transferred to coder 131. As is well known in the art, coder 131 is operative to quantize the $\beta_i m_i$ elements and to form a coded signal suitable for transmission to network 140.

Each of filters 121 and 123 in FIG. 1 may comprise a transversal filter of the type described in aforementioned U.S. Pat. No. 4,133,976. Each of processors 125 and 127 may comprise one of the processor arrangements well known in the art adapted to perform the processing required by Equations 4 and 6 such as the C.S.P., Inc. Macro Arithmetic Processor System 100 or other processor arrangements well known in the art. Processor 125 includes a read-only memory which permanently stores programmed instructions to control the C_{iq} signal formation in accordance with Equation 4 and processor 127 includes a read-only memory which permanently stores programmed instructions to select the B_i, m_i signal elements according to Equation 6 as is well known in the art. The program instructions in processor 125 are set forth in FORTRAN language form in Appendix A and the program instructions in processor 127 are listed in FORTRAN language form in Appendix B.

FIG. 3 depicts a flow chart showing the operation of processors 125 and 127 for each time frame. Referring to FIG. 3, the h_k impulse response signals are generated in box 305 responsive to the frame predictive parameters for the transfer function of Equation 1. This occurs after receipt of the FC signal from clock 103 in FIG. 1 as per wait box 303. The element index i and the excitation pulse location index q are initially set to 1 in box 307. Upon receipt of signals y_n and $\hat{y}_{n,i-1}$ from predictive filters 121 and 123, signal C_{iq} is formed as per box 309. The location index q is incremented in box 311 and the formation of the next location C_{iq} signal is initiated.

After the C_{iQ} signal is formed for excitation signal element i in processor 125, processor 127 is activated. The q index in processor 127 is initially set to 1 in box 315 and the i index as well as the C_{iq} signals formed in processor 125 are transferred to processor 127. Signal C_{iq^*} which represents the C_{iq} signal having the maximum absolute value and its location q^* are set to zero in box 317. The absolute values of the C_{iq} signals are compared to signal C_{iq^*} and the maximum of these absolute values is stored as signal C_{iq^*} in the loop including boxes 319, 321, 323, and 325.

After the C_{iQ} signal from processor 125 has been processed, box 327 is entered from box 325. The excitation code element location m_i is set to q^* and the magnitude of the excitation code element β_i is generated in accordance with Equation 6. The $\beta_i m_i$ element is output to predictive filter 123 as per box 328 and index i is incremented as per box 329. Upon formulation of the $\beta_I m_I$ element of the frame, wait box 303 is reentered from decision box 331. Processors 125 and 127 are then placed in wait states until the FC frame clock pulse of the next frame.

The excitation code in processor 127 is also supplied to coder 131. The coder is operative to transform the excitation code from processor 127 into a form suitable for use in network 140. The prediction parameter signals a_k for the frame are supplied to an input of multiplexer 135 via delay 133 as prediction signals a'_k. The excitation coded signal ECS from coder 131 is applied to the other input of the multiplexer. The multiplexed excitation and predictive parameter codes for the frame are then sent to network 140.

Network 140 may be a communication system, the message store of a voice storage arrangement, or apparatus adapted to store a complete message or vocabulary of prescribed message units, e.g., words, phonemes, etc., for use in speech synthesizers. Whatever the message unit, the resulting sequence of frame codes from circuit 120 are forwarded via network 140 to speech synthesizer 150. The synthesizer, in turn, utilizes the frame excitation codes from circuit 120 as well as the frame predictive parameter codes to construct a replica of the speech pattern.

Demultiplexer 152 in synthesizer 150 separates the excitation code EC of a frame from the prediction parameters a_k thereof. The excitation code, after being

decoded into an excitation pulse sequence in decoder 153, is applied to the excitation input of speech synthesizer filter 154. The a_k codes are supplied to the parameter inputs of filter 154. Filter 154 is operative in response to the excitation and predictive parameter signals to form a coded replica of the frame speech signal as is well known in the art. D/A converter 156 is adapted to transform the coded replica into an analog signal which is passed through low-pass filter 158 and transformed into a speech pattern by transducer 160.

An alternative arrangement to perform the excitation code formation operations to circuit 120 may be based on the weighted means squared error between signals y_n and $\hat{y}_n$. This weighted mean squared error upon forming β_l and m_l for the l^{th} excitation signal pulse is

$$E_l = \sum_{n=1}^{N} \left(y_n - \sum_{j=1}^{l} \beta_j h_{n-m_j} \right)^2 \tag{7}$$

where h_n is the n^{th} sample of the impulse response of $H(z)$, m_j is the location of the j^{th} pulse in the excitation code signal, and β_j is the magnitude of the j^{th} pulse.

The pulse locations and amplitudes are generated sequentially. The i^{th} element of the excitation is determined by minimizing E_l in Equation 7. Equation 7 may be rewritten as

$$E_l = \sum_{n=1}^{N} \left[\left(y_n - \sum_{j=1}^{l-1} \beta_j h_{n-m_j} \right)^2 + \beta_l^2 h_{n-m_l}^2 + -2\beta_l \left(y_n h_{n-m_l} - \sum_{j=1}^{l-1} \beta_j h_{n-m_j} h_{n-m_l} \right) \right] \tag{8}$$

so that the known excitation code elements preceding β_l, m_l appear only in the first term.

As is well known, the value of β_l which minimizes E_l can be determined by differentiating Equation 8 with respect to β_l and setting

$$\frac{\partial E_l}{\partial \beta_l} = 0 \tag{9}$$

Consequently, the optimum value of β_l is

$$= \frac{\sum_{k=m_l-K}^{m_l+K} d_k \phi_{|k-m_l|} - \sum_{j=1}^{l-1} \beta_j \phi_{|m_j-m_l|}}{\phi_0} \tag{10}$$

where

$$\phi_k = \sum_{n=k}^{K} h_n h_{n-k} \quad 0 \le k \le K \tag{11}$$

are the autocorrelation coefficients of the predictive filter impulse response signal h_k.

β_l in Equation 10 is a function of the pulse location and is determined for each possible value thereof. The maximum of the $|\beta_l|$ values over the possible pulse locations is then selected. After β_l and m_l values are obtained, β_{l+1} m_{l+1} values are generated by solving Equation 10 in similar fashion. The first term of Equation 10, i.e.,

$$\sum_{k=m_l-K}^{m_l+K} d_k \phi_{|k-m_l|}$$

corresponds to the speech representative signal of the frame at the output of predictive filter 121. The second term of Equation 10, i.e.,

$$\sum_{j=1}^{l-1} \beta_j \phi_{|m_j-m_l|}$$

corresponds to the artificial speech representative signal of the frame at the output of predictive filter 123. β_l is the amplitude of an excitation pulse at location m_l which minimizes the difference between the first and second terms.

The data processing circuit depicted in FIG. 2 provides an alternative arrangement to excitation signal forming circuit 120 of FIG. 1. The circuit of FIG. 2 yields the excitation code for each frame of the speech pattern in response to the frame prediction residual signal d_k and the frame prediction parameter signals a_k in accordance with Equation 10 and may comprise the previously mentioned C.S.P., Inc. Macro Arithmetic Processor System 100 or other processor arrangements well known in the art.

Referring to FIG. 2, processor 210 receives the predictive parameter signals a_k and the prediction residual signals d_n of each successive frame of the speech pattern from circuit 110 via store 218. The processor is operative to form the excitation code signal elements β_1 m_1, β_2, m_2, . . . , β_l, m_l under control of permanently stored instructions in predictive filter subroutine read-only memory 201 and excitation processing subroutine read-only memory 205. The predictive filter subroutine of ROM 201 is set forth in Appendix C and the excitation processing subroutine in ROM 205 is set forth in Appendix D.

Processor 210 comprises common bus 225, data memory 230, central processor 240, arithmetic processor 250, controller interface 220 and input-output interface 260. As is well known in the art, central processor 240 is adapted to control the sequence of operations of the other units of processor 210 responsive to coded instructions from controller 215. Arithmetic processor 250 is adapted to perform the arithmetic processing on coded signals from data memory 230 responsive to control signals from central processor 240. Data memory 230 stores signals as directed by central processor 240 and provides such signals to arithmetic processor 250 and input-output interface 260. Controller interface 220 provides a communication link for the program instructions in ROM 201 and ROM 205 to central processor 240 via controller 215, and input-output interface 260 permits the d_k and a_k signal to be supplied to data memory 230 and supplies output signals β_l and m_l from the data memory to coder 131 in FIG. 1.

The operation of the circuit of FIG. 2 is illustrated in the filter parameter processing flow chart of FIG. 4, the excitation code processing flow chart of FIG. 5, and the timing chart of FIG. 6. At the start of the speech signal, box 410 in FIG. 4 is entered via box 405 and the frame count r is set to the first frame by a single pulse ST from clock generator 103. FIG. 6 illustrates the operation of the circuit of FIGS. 1 and 2 for two successive frames. Between times t_0 and t_7 in the first frame, prediction

analyzer 110 forms the speech pattern samples of frame r+2 as in waveform 605 under control of the sample clock pulses of waveform 601. Analyzer 110 generates the a_k signals corresponding to frame r+1 between times t_0 and t_3 and forms predictive residual signal d_k between times t_3 and t_6 as indicated in waveform 607. Signal FC (waveform 603) occurs between times t_0 and t_1. The signals d_k from residual signal generator 118 previously stored in store 218 during the preceding frame are placed in data memory 230 via input-output interface 260 and common bus 225 under control of central processor 240. As indicated operation box 415 of FIG. 4, these operations are responsive to frame clock signal FC. The frame prediction parameter signals a_k from prediction parameter computer 119 previously placed in store 218 during the preceding frame are also inserted in memory 230 as per operation box 420. These operations occur between times t_0 and t_1 on FIG. 6.

After insertion of the frame d_k and a_k signals into memory 230, box 425 is entered and the predictive filter coefficients b_k corresponding to the transfer function of Equation 1:

$$b_k = \alpha^k a_k, k = 1, 2, \ldots, p \tag{12}$$

are generated in arithmetic processor 250 and placed in data memory 230. p is typically 16 and α is typically 0.85 for a sampling rate of 8 KHz. The predictive filter impulse response signals h_k

$$h_0 = 1 \tag{13}$$

$$h_k = \sum_{i=1}^{\min(k-1,p)} b_i h_{k-i}, k = 1, 2, \ldots, K$$

are then generated in arithmetic processor 250 and stored in data memory 230. When the h_k impulse response signal is stored, box 435 is entered and the predictive filter autocorrelation signals of Equation 11 are generated and stored.

At time t_2 in FIG. 6, controller 215 disconnects ROM 201 from interface 220 and connects excitation processing subroutine ROM 205 to the interface. The formation of the β_i, m_i excitation pulse codes shown in the flow chart of FIG. 5 is then initiated. Between times t_2 and t_4 in FIG. 6, the excitation pulse sequence is formed. Excitation pulse index i is initially set to 1 and pulse location index q is set to 1 in box 505. β_1 is set to zero in box 510 and operation box 515 is entered to determine $\beta_q = \beta_{11}$. β_{11} is the optimum excitation pulse at location q=1 of the frame. The absolute value of β_{11} is then compared to the previously stored β_i in decision box 520. Since β_1 is initially zero, the m_i code is set to q=1 and the β_i code is set to β_{11} in box 525.

Location index q is then incremented in box 530 and box 515 is entered via decision box 535 to generate signal β_{12}. The loop including boxes 515, 520, 525, 530 and 535 is iterated for all pulse location values $1 \leq q \leq Q$. After the Q^{th} iteration, the first excitation pulse amplitude $\beta_1 = \beta_{1q^*}$ and its location in the frame $m_1 = q^*$ are stored in memory 230. In this manner, the first of the I excitation pulses is determined. Referring to waveform 705 in FIG. 7, frame r occurs between times t_0 and t_1. The excitation code for the frame consists of 8 pulses. The first pulse of amplitude β_1 and location m_1 occurs at time t_{m1} in FIG. 7 as determined in the flow chart of FIG. 5 for index i=1.

Index i is incremented to the succeeding excitation pulse in box 545 and operation box 515 is entered via box 550 and box 510. Upon completion of each iteration of the loop between boxes 510 and 550, the excitation signal is modified to further reduce the signal of Equation 7. Upon completion of the second iteration, pulse $\beta_2 m_2$ (time t_{m2} in waveform 705) is formed. Excitation pulses $\beta_3 m_3$ (time t_{m3}), $\beta_4 m_4$ (time t_{m4}), $\beta_5 m_5$ (time t_{m5}), $\beta_6 m_6$ (time t_{m6}), $\beta_7 m_7$ (time t_{m7}), and $\beta_8 m_8$ (time t_{m8}), are then successively formed as index i is incremented.

After the I^{th} iteration (waveform 609 at t_4), box 555 is entered from decision box 550 and the current frame excitation code $\beta_1 m_1, \beta_2 m_2, \ldots, \beta_{Im} I$ is generated therein. The frame index is incremented in box 560 and the predictive filter operations of FIG. 4 for the next frame are started in box 415 at time t_7 in FIG. 6. Upon the occurrence of the FC clock signal for the next frame at t_7 in FIG. 6, the predictive parameter signals for frame r+3 are formed (waveform 605 between times t_7 and t_{14}), the a_k and d_k signals are generated for frame r+2 (waveform 607 between times t_7 and t_{13}), and the excitation code for frame r+1 is produced (waveform 609 between times t_7 and t_{12}).

The frame excitation code from the processor of FIG. 2 is supplied via input-output interface 260 to coder 131 in FIG. 1 as is well known in the art. Coder 131 is operative as previously mentioned in quantize and format the excitation code for application to network 140. The a_k prediction parameter signals for the frame are applied to one input of multiplexer 135 through delay 133 so that the frame excitation code from coder 131 may be appropriately multiplexed therewith.

The invention has been described with reference to particular illustrative embodiments. It is apparent to those skilled in the art with various modifications may be made without departing from the scope and the spirit of the invention. For example, the embodiments described herein have utilized linear predictive parameters and a predictive residual. The linear predictive parameters may be replaced by formant parameters or other speech parameters well known in the art. The predictive filters are then arranged to be responsive to the speech parameters that are utilized and to the speech signal so that the excitation signal formed in circuit 120 of FIG. 1 is used in combination with the speech parameter signals to construct a replica of the speech pattern of the frame in accordance with the invention. The encoding arrangement of the invention may be extended to sequential patterns such as biological and geological patterns to obtain efficient representations thereof.

APPENDIX A

```
C     THIS SUBROUTINE IMPLEMENTS BOX NOS 125-FIG. 1
C      ++++++ CORRELATION SIGNAL GENERATOR ++++++

      COMMON Y(110),YHAT(110),H(15),CI(110),A(15),F(16),
     &BETA(12),M(12)
```

```
                11                                          12
          INTEGER I,K,Q,QSTAR,QMAX
          DATA NLPC/16/,KMAX/15/,NMAX/110/,
         &QMAX/95/,ALPHA/0.85/,IMAX/12/
C++++     COMPUTE COEFFICIENTS FOR THE PREDICTIVE FILTER
         G=1
         DO101K=1,NLPC
         G=G*ALPHA
  101    F(K)=A(K)*G

C++++      BOX 305 FIG. 3
C++++      COMPUTE IMPULSE RESPONSE OF
C++++        PREDICTIVE FILTER H(Z)
C++++      H(0) IS STORED AS H(1) , H(1) IS
C++++        STORED AS H(2), AND SO ON
         H(1)=1
         DO102K=2,NLPC
         H(K)=0
         DO102I=1,K-1
  102    H(K)=H(K)+F(I)*H(K-I)

         DO103K=NLPC+1,KMAX
         H(K)=0
         DO103I=1,NLPC
  103    H(K)=H(K)+F(I)*H(K-I)

         SUMSQH=0
         DO104K=1,KMAX
  104    SUMSQH=SUMSQH+H(K)*H(K)

C++++    SET INITIAL EXCITATION SIGNAL COUNT - BOX 307
         I=1
         Q=1

  500    Q=1
  200    CONTINUE

C++++      COMPUTE CORRELATION SIGNAL - BOX 309
         DO201N=Q,NMAX
  201    CI(Q)=CI(Q)+(Y(N)-YHAT(N))*H(N-Q+1)
         Q=Q+1
         IF(Q.LE.QMAX)GOTO200

         CALL BOX127(I,SUMSQH)

         I=I+1
         IF(I.LE.IMAX)GOTO500
         RETURN
         END
```

APPENDIX B

```
C     THIS SUBROUTINE IMPLEMENTS BOX NOS 127 - FIG. 1
C       ++++++ EXCITATION SIGNAL GENERATOR  ++++++

      COMMON Y(110),YHAT(110),H(15),CI(110),A(16,F(16),
     &BETA(12),M(12)
```

```
      INTEGER I,K,Q,QSTAR,QMAX
      DATA NLPC/16/,KMAX/15/,NMAX/110/,QMAX/95/,
     &ALPHA/0.85/, IMAX/12/
C++++    FIND PEAK OF THE CORRELATION SIGNAL -
C++++      BOX 315-325
      Q=1
      QSTAR=0
      CIQSTAR=0

300   IF(ABS(CI(Q)).LT.ABS(CIQSTAR))GOTO301
      QSTAR=Q
      CIQSTAR=CI(Q)

301   Q=Q+1
      IF(Q.LE.QMAX)GOTO300

      M(I)=QSTAR
      BETA(I)=CIQSTAR/SUMSQH

      RETURN
      END
```

APPENDIX C

```
C     THIS SUBROUTINE IMPLEMENTS ROM 201 - FIG. 2
C      ++++++  PREDICTIVE FILTER ++++++

      COMMON D(110),H(15),BETAI(80),A(16),F(16),
     &PHI(15),BETA(12),M(12)
      INTEGER I,K,Q,QSTAR,QMAX
      DATA NLPC/16/,KMAX/15/,NMAX/110/,QMAX/80/,
     &ALPHA/0.85/, IMAX/12/

C++++    READ PREDICTIVE RESIDUAL SIGNAL - BOX 415
      CALL INPUT (D(29),80)

C++++    READ PREDICTION PARAMETERS - BOX 420
      CALL INPUT(A,16)

C++++    COMPUTE COEFFICIENTS FOR THE PREDICTIVE
C++++     FILTER - BOX 425
      G=1
      DO101K=1,NLPC
      G=G*ALPHA
  101 F(K)=A(K)*G

C++++    COMPUTE IMPULSE RESPONSE OF PREDICTIVE
C++++     FILTER H(Z)
C++++    H(0) IS STORED AS H(1) , H(1)
C++++     IS STORED AS H(2), AND SO ON
C++++    BOX 430
      H(1)=1
      DO102K=2,NLPC
      H(K)=0
      DO102I=1,K-1
  102 H(K)=H(K)+F(I)*H(K-I)
```

```
      DO103K=NLPC+1,KMAX
      H(K)=0
      DO103I=1,NLPC
  103 H(K)=H(K)+F(I)*H(K-I)
C++++   COMPUTE AUTOCORRELATION FUNCTION SIGNALS -
C++++    BOX 435
      DO104K=1,KMAX
      PHI(K)=0
      DO104N=K,KMAX
  104 PHI(K)=PHI(K)+H(N)*H(N+K-1)

      RETURN
      END
```

APPENDIX D

```
C      THIS SUBROUTINE IMPLEMENTS ROM 205 - FIG. 2
C         ++++++ EXCITATION PROCESSING ++++++

       COMMON D(110),H(15),BETAI(80),A(16),
      &PHI(15),BETA(12),M(12)
       INTEGER I,K,Q,QSTAR,QMAX
       DATA NLPC/16/,KMAX/15/,NMAX/110/,QMAX/80/,
      &ALPHA/0.85/, IMAX/12/

C++++  COMPUTE INITIAL BETAI SIGNAL (I=1)
C++++  TERM NO 1 EQUATION 10 AND BOX 515
       DO105Q=1,QMAX
       BETAI(Q)=0
       DO105N=Q,Q+2*KMAX-2
       K=N-KMAX+1
  105  BETAI(Q)=BETAI(Q)+D(N)*PHI(1+IABS(K-Q))

C++++   SET INITIAL EXCITATION SIGNAL COUNT - BOX 505
       I=1
       Q=1

  500  CONTINUE
       BETAMAX=0

  200  CONTINUE

C++++     COMPUTE BETAI SIGNAL - BOX 515
       IF(I.EQ.1)GOTO100
       DO201J=1,I-1
  201  BETAI(Q)=BETAI(Q)-BETA(J)*PHI(1+IABS(M(J)-Q))

C++++  FIND PEAK OF THE BETAI SIGNAL - BOX 520-525
  300  IF(ABS(BETAI(Q)).LT.BETAMAX)GOTO301

       M(I)=Q
       BETAMAX=ABS(BETAI(Q))
       BETA(I)=BETAI(Q)/PHI(I)

  301  Q=Q+1
       IF(Q.LE.QMAX)GOTO200
```

```
      I=I+1
      IF(I.LE.IMAX)GOTO500
CALL OUTPUT(SETA,IMAX)
CALL OUTPUT(M,IMAX)

DO5K=1,29
D(K)=D(K+80)

RETURN
END
```

What is claimed is:

1. A method for processing a sequential pattern comprising the steps of: partitioning said sequential pattern into successive time intervals; generating a set of signals representative of the sequential pattern of each time interval responsive to said time interval sequential pattern; generating a signal corresponding to the differences between said interval sequential pattern and the interval representative signal set responsive to said interval sequential pattern and said interval representative signals; forming a first signal corresponding to the interval pattern responsive to said interval pattern representative signals and said interval differences representative signal; generating a second interval corresponding signal responsive to said interval pattern representative signals; generating a signal corresponding to the differences between said first and second interval corresponding signals; producing a third signal responsive to said interval differences corresponding signal for altering said second signal to reduce the interval differences corresponding signal; and utilizing said third signal to construct a replica of said interval sequential pattern.

2. A method for processing a speech pattern comprising the steps of: partitioning the speech pattern into successive time intervals; generating a set of signals representative of said speech pattern of each time interval responsive to said interval speech pattern; generating a signal representative of the differences between said interval speech pattern and the interval speech pattern representative signal set responsive to said interval speech pattern and said interval speech pattern representative signals; forming a first signal corresponding to the interval speech pattern responsive to said interval speech pattern representative signals and the interval differences representative signal; forming a second interval corresponding signal responsive to the interval speech pattern representative signals; generating a signal corresponding to the differences between said first and second interval corresponding signals; and producing a third signal responsive to said interval differences corresponding signal for altering said second signal to reduce the interval differences corresponding signal.

3. A method for processing a speech pattern according to claim 2 wherein: said interval representative signal set generating step comprises generating a set of speech parameter signals representative of said interval speech pattern; said first interval corresponding signal forming step comprises generating said first interval corresponding signal responsive to said speech parameter signals and said differences representative signal; and said second interval corresponding signal forming step comprises generating said second interval corresponding signal responsive to said interval speech parameter signals.

4. A method for processing a speech pattern according to claim 3 wherein said speech parameter signal generating step comprises generating a set of signals representative of the interval speech spectrum.

5. A method for processing a speech pattern according to claim 4 wherein: said third signal producing step comprises generating a coded signal having at least one element responsive to the interval differences corresponding signal; and modifying said second interval corresponding signal responsive to said coded signal element.

6. A method for processing a speech pattern according to claim 5 wherein: said coded signal generating step comprises generating, for a predetermined number of times, a coded signal element responsive to said interval differences corresponding signal; and modifying said second interval corresponding signal responsive to said generated coded signal elements.

7. A method for processing a speech pattern according to claim 6 wherein: said differences corresponding signal generating step comprises generating a signal representative of the correlation between said first interval corresponding and second interval corresponding signals.

8. A method for processing a speech pattern according to claim 5 wherein said differences corresponding signal generating step comprises generating a signal representative of the mean squared difference between said first and second interval corresponding signals.

9. A method for processing a speech pattern according to claims 2, 3, or 4 further comprising the step of utilizing said third signal to construct a replica of said interval speech pattern.

10. A sequential pattern processor comprising means for partitioning a sequential pattern into successive time intervals; means responsive to each time interval sequential pattern for generating a set of signals representative of the sequential pattern of said time interval; means responsive to said interval sequential pattern and said interval representative signals for generating a signal representative of the differences between said interval sequential pattern and the interval representative signal set; means responsive to said interval pattern representative signals and said differences representative signal for forming a first signal corresponding to the interval pattern; means responsive to said interval pattern representative signals for generating a second interval corresponding signal; means for generating a signal corresponding to the differences between said first and second interval corresponding signals; and means responsive to said interval differences corresponding signal for producing a third signal for altering said second signal to reduce the interval differences

corresponding signal; and means for utilizing said third signal to construct a replica of said interval sequential pattern.

11. A speech processor comprising means for partitioning a speech pattern into successive time intervals; means responsive to each interval speech pattern for generating a set of signals representative of the speech pattern of said time interval; means responsive to said interval speech pattern and said interval speech pattern representative signals for generating a signal representative of the differences between said interval speech pattern and the interval representative signal set; means responsive to said speech interval signals and said interval differences representative signal for forming a first signal corresponding to the interval speech pattern; means responsive to said interval speech pattern representative signals for forming a second interval corresponding signal; means for generating a signal corresponding to the differences between said first and second interval corresponding signals; and means responsive to said interval differences corresponding signal for producing a third signal for altering said second interval corresponding signal to reduce the interval differences corresponding signal.

12. A speech processor according to claim 11 wherein: said speech interval representative signal set generating means comprises means for generating a set of signals representative of prescribed speech parameters of said interval speech pattern; said first interval corresponding signal forming means comprises means responsive to said interval prescribed speech parameter signals and said differences representative signal for generating said first interval corresponding signal; said second interval corresponding signal forming means comprises means responsive to said interval prescribed speech parameter signals for generating the second interval corresponding signal.

13. A speech processor according to claim 12 wherein said prescribed speech parameter signal generating means comprises means for generating a set of signals representative of the interval speech pattern spectrum.

14. A speech processor according to claim 13 wherein: said third signal producing means comprises means responsive to said interval differences corresponding signal for generating a coded signal having at least one element; and means responsive to said coded signal elements for modifying said second interval corresponding signal.

15. A speech processor according to claim 14 wherein: said coded signal generating means comprises means operative N times to produce an N element coded signal including means responsive to said differences corresponding signal for generating coded signal elements; and means responsive to the generated coded signal elements for modifying said second interval corresponding signal.

16. A speech processor according to claim 15 wherein: said interval differences corresponding signal generating means comprises means for generating a signal representative of the correlation between said first and second interval corresponding signals.

17. A speech processor according to claim 15 wherein said interval differences corresponding signal generating means comprises means for generating a signal representative of the mean squared difference between said first and second interval corresponding signals.

18. A speech processor according to claims 11, 12, or 13 further comprising the step of utilizing said third signal to construct a replica of said interval speech pattern.

19. A method for encoding a speech pattern comprising the steps of: partitioning a speech pattern into successive time frames; generating for each frame a set of speech parameter signals responsive to the frame speech pattern; generating a signal representative of the differences between the frame speech pattern and said speech parameter signal set responsive to said frame speech pattern and said frame speech parameter signals; generating a first signal corresponding to the frame speech pattern responsive to said frame speech parameter signals and said differences representative signal; generating a second frame corresponding signal responsive to said frame speech parameter signals; generating a signal corresponding to the differences between said first and second interval corresponding signals; and producing a coded signal responsive to said interval differences corresponding signal for modifying said second interval corresponding signal to reduce said interval differences corresponding signal.

20. A method for encoding a speech signal according to claim 19 further comprising combining said produced coded signal and said speech parameter signals to form a coded signal representative of the frame speech pattern.

21. A method for encoding a speech signal according to claim 19 wherein said speech parameter signal set generation comprises generating a set of linear predictive parameter signals for the frame responsive to said frame speech pattern; and said differences representative signal generation comprises generating a predictive residual signal responsive to said frame linear prediction parameter signals and said frame speech pattern.

22. A method for encoding a speech signal according to claim 21 wherein said coded signal producing step comprises generating a coded signal having at least one element responsive to said differences corresponding signal; and modifying said frame second signal responsive to said coded signal elements.

23. A method for encoding a speech pattern according to claim 21 wherein said signal producing step comprises generating a multielement coded signal by successively generating a coded signal element responsive to said differences corresponding signal and modifying said second signal responsive to said coded signal elements.

24. Apparatus for encoding a speech pattern comprising means for partitioning a speech pattern into successive time frames; means responsive to the frame speech pattern for generating for each frame a set of speech parameter signals; means responsive to said frame speech parameter signals and said frame speech pattern for generating a signal representative of the differences between said frame speech pattern and said frame speech parameter signal set; means responsive to said frame speech parameter signals and said differences representative signal for generating a first signal corresponding to said frame speech pattern; means responsive to said frame speech parameter signals for generating a second frame corresponding signal; means for generating a signal corresponding to the differences between said first and second frame corresponding signals; and means responsive to said frame differences corresponding signal for producing a third signal to

modify said second signal to reduce the frame differences corresponding signal.

25. Apparatus for encoding a speech pattern according to claim 24 further comprising means for combining said produced coded signal and said speech parameter signals to form a coded signal representative of the frame speech pattern.

26. Apparatus for encoding a speech pattern according to claim 24 wherein said speech parameter signal generating means comprises means responsive to said frame speech pattern for generating a set of linear predictive parameter signals for the frame; said differences representative signal generating means comprises means responsive to said frame linear prediction parameter signals and said frame speech pattern for generating a frame predictive residual signal; said first signal generating means comprises means responsive to said frame predictive parameter signals and said frame predictive residual signal for forming said first frame corresponding signal; and said second signal generating means comprises means responsive to said frame linear predictive parameter signals for forming said second frame corresponding signal.

27. Apparatus for encoding a speech pattern according to claim 26 wherein said coded signal producing means comprises means responsive to said difference corresponding signal for generating a coded signal having at least one element; and means responsive to said coded signal element for modifying said second signal.

28. Apparatus for encoding a speech pattern according to claim 26 wherein said coded signal producing means comprises means for generating a multielement coded signal including means operative successively for generating a coded signal element responsive to said differences corresponding signal and for modifying said second signal responsive to said coded signal elements.

29. A speech processor comprising means for partitioning a speech pattern into successive time frames; means responsive to the speech pattern of each frame for producing a set of predictive parameter signals and a predictive residual signal; means responsive to said frame predictive parameter and predictive residual signals for generating a first signal corresponding to the frame speech pattern; means responsive to said frame predictive parameter signals for generating a second frame corresponding signal; means responsive to said first and second frame corresponding signals for producing a signal corresponding to the differences between said first and second frame corresponding signals; means responsive to said frame differences corresponding signal for generating a coded excitation signal and for applying said coded excitation signal to said second signal generating means to reduce the differences corresponding signal.

30. A speech processor according to claim 29 further comprising means responsive to said frame coded excitation signal and said frame predictive parameter signals for constructing a replica of said frame speech pattern.

31. A speech processor according to claim 29 or claim 30 wherein said coded excitation signal generating means comprises means operative successively to form a multielement coded signal comprising means responsive to the differences corresponding signal for forming an element of said multielement code and for modifying said second signal responsive to said coded signal elements.

32. A method for processing a speech pattern according to claim 5, 6, 7, or 8 further comprising the step of utilizing said coded signal to construct a replica of said interval speech pattern.

33. A speech processor according to claim 14, 15, 16, or 17 further comprising means for utilizing said coded signal to construct a replica of said interval speech pattern.

34. A speech processor for producing a speech message comprising: means for receiving a sequence of speech message time interval signals, each speech interval signal including a plurality of spectral representative signals and an excitation representative signal for said time interval; means jointly responsive to said interval spectral representative signals and said interval excitation representative signal for generating a speech pattern corresponding to the speech message; said interval excitation speech signal being formed by the steps of: partitioning a speech message pattern into successive time intervals; generating a set of signals representative of said speech message pattern for each time interval responsive to said interval speech pattern; generating a signal representative of the differences between said interval speech pattern and said representative signal set responsive to said interval speech pattern and said interval respresentative signals; forming a first signal corresponding to the interval speech message pattern responsive to said speech message pattern interval representative signals and differences representative signals; forming a second interval corresponding signal responsive to said interval speech message pattern representative signals; generating a signal corresponding to the differences between said first and second interval corresponding signals; and producing a third signal responsive to said interval differences corresponding signal for altering said second interval corresponding signal to reduce the interval differences corresponding signal, said third signal being said interval excitation representative signal.

35. A speech processor according to claim 34 wherein said interval differences corresponding signal generating step comprises generating a signal representative of the correlation between said first interval corresponding signal and said second interval corresponding signal and said third signal producing step comprises forming a coded signal responsive to said correlation representative signal.

36. A speech processor according to claim 34 or 35 wherein said speech message interval spectral representative signals are time interval predictive parameter signals.

37. A method for producing a speech message comprising the steps of: receiving a sequence of speech message interval signals, each speech interval signal including a plurality of spectral representative signals and an excitation representative signal; and generating a speech pattern corresponding to the speech message jointly responsive to said interval spectral representative signals and said interval excitation representative signals; said interval excitation speech signal being formed by the steps of: partitioning a speech pattern into successive time intervals; generating a set of signals representative of the spectrum of said speech pattern for each time interval responsive to said interval speech pattern; generating a signal representative of the differences between said interval speech pattern and said interval speech pattern spectral representative signal set responsive to said interval speech pattern and said spectral representative signals; forming a first signal corresponding to the interval speech pattern responsive to

said interval spectral representative signals and said differences representative signal; forming a second interval corresponding signal responsive to said speech pattern interval spectral representative signals; generating a signal corresponding to the differences between said first and second interval corresponding signals; and producing a third signal responsive to said interval differences corresponding signal for altering said second interval corresponding signal to reduce the interval differences corresponding signal said third signal being said interval excitation signal.

38. A method for producing a speech message according to claim 37 wherein said interval differences corresponding signal generating step comprises generating a signal representative of the correlation between said first signal and said second signal and said third signal producing step comprises forming a prescribed format signal responsive to said correlation representative signal.

39. A method for producing a speech message according to claim 37 or 38 wherein said speech interval spectral representative signals are speech interval predictive parameter signals.

40. Apparatus for producing a speech message comprising:

means for receiving a sequence of speech message signals for the successive time intervals of the speech message, each time interval speech message signal including a set of coded spectral representative signals for the time interval portion of said speech message and a plurality of pulse amplitude and location coded signals representative of the differences between the time interval portion of the speech message and the time interval portion of the speech message formed from said spectral representative signals;

means for converting the plurality of pulse amplitude and location codes of said time interval into a signal representative of the excitation of the time interval portion of said speech message; and

means jointly responsive to said interval spectral representative signals and said interval excitation representative signal for generating a speech pattern corresponding to the speech message of said time interval.

41. Apparatus for producing a speech message according to claim 40 wherein said converting means comprises means responsive to said amplitude and location codes for forming a sequence of pulses within said time interval representative of the excitation of the speech message portion of said time interval.

42. A method for producing a speech message comprising the steps of:

receiving a sequence of speech message signals for the successive time interval portions of the speech message, each time interval speech message signal including a set of coded spectral representative signals for the time interval portion of said speech message and a plurality of pulse amplitude and location coded signals representative of the differences between the time interval portion of the speech message and the time interval portion of the speech message formed from said spectral representative signals;

converting the plurality of pulse amplitude and location codes of said time interval into a signal representative of the excitation of the time interval portion of said speech message; and

generating a speech pattern corresponding to the speech message of said time interval jointly responsive to said interval spectral representative signals and said interval excitation representative signal.

43. A method for producing a speech message according to claim 42 wherein said converting step comprises forming a sequence of pulses within said time interval representative of the excitation of the speech message portion of said time interval responsive to said amplitude and location codes.

* * * * *

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(54) **METHODS AND SYSTEMS FOR SYNCHRONIZING MULTIPLE COMPUTING DEVICES**

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(58) **Field of Search** 709/208, 220, 709/248, 217, 219, 221, 222; 707/201

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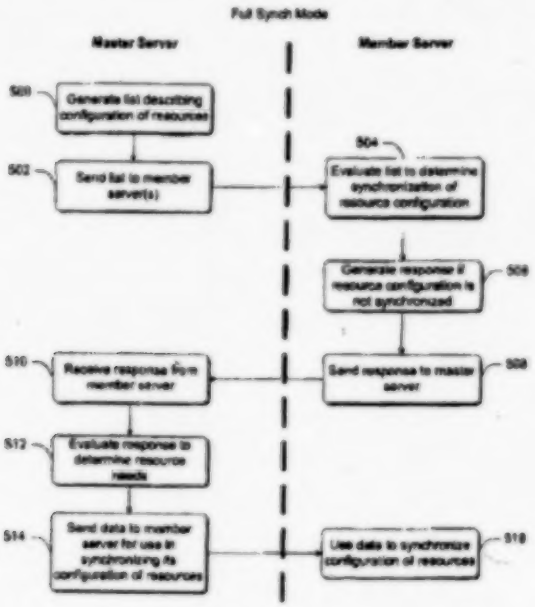
(57) **ABSTRACT**

Methods and systems for synchronizing a configuration of resources across multiple computing devices are described. Associated with the master computing device is a configuration of resources that are desired to be synchronized across the additional computing devices. The master computing device is configured to develop a list that describes aspects of its configuration of resources. Additional computing devices are configured to receive the list that is developed by the master computing device and evaluate the list to determine whether its particular configuration of resources is synchronized with those of the master computing device. If a particular additional computing device's configuration of resources is not synchronized with those of the master computing device, the additional computing device prepares a second list that describes its resource configuration needs and sends the second list to the master computing device. The master computing device receives the second list, evaluates it, and sends data to the corresponding additional computing device for use in synchronizing its configuration of resources.

56 Claims, 6 Drawing Sheets



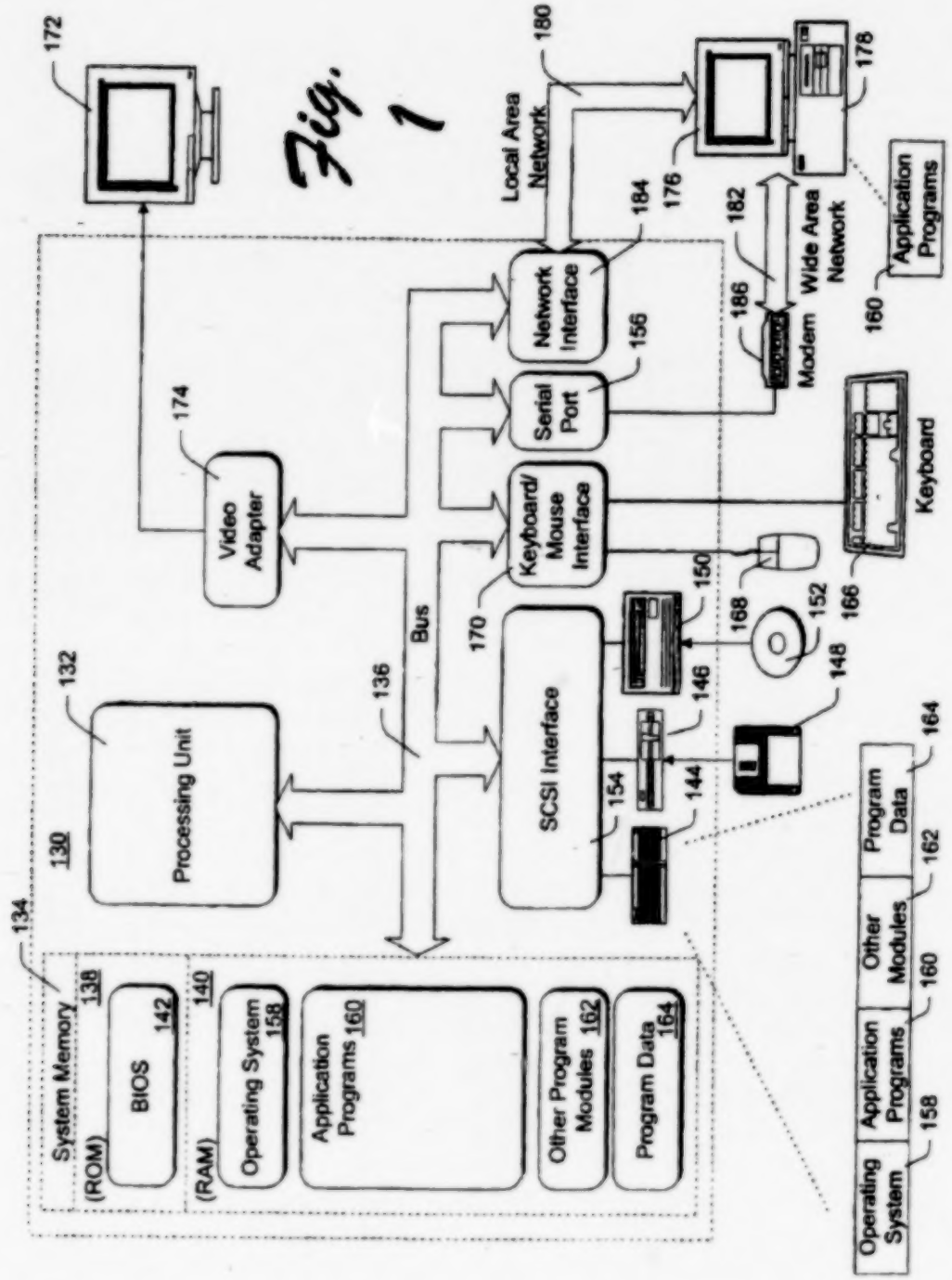


Fig. 1
172
Local Area Network
180
178
Application Programs
160
Wide Area Network
182
Modem
186
176
184
Network Interface
156
Serial Port
174
Video Adapter
Keyboard/ Mouse Interface
Keyboard
170
150
168
152
166
Bus
136
132
Processing Unit
130
SCSI Interface
146
148
154
144
134
System Memory
138
(ROM)
BIOS
142
140
(RAM)
Operating System
158
Application Programs
160
Other Program Modules
162
Program Data
164
Operating System
158
Application Programs
160
Other Modules
162
Program Data
164

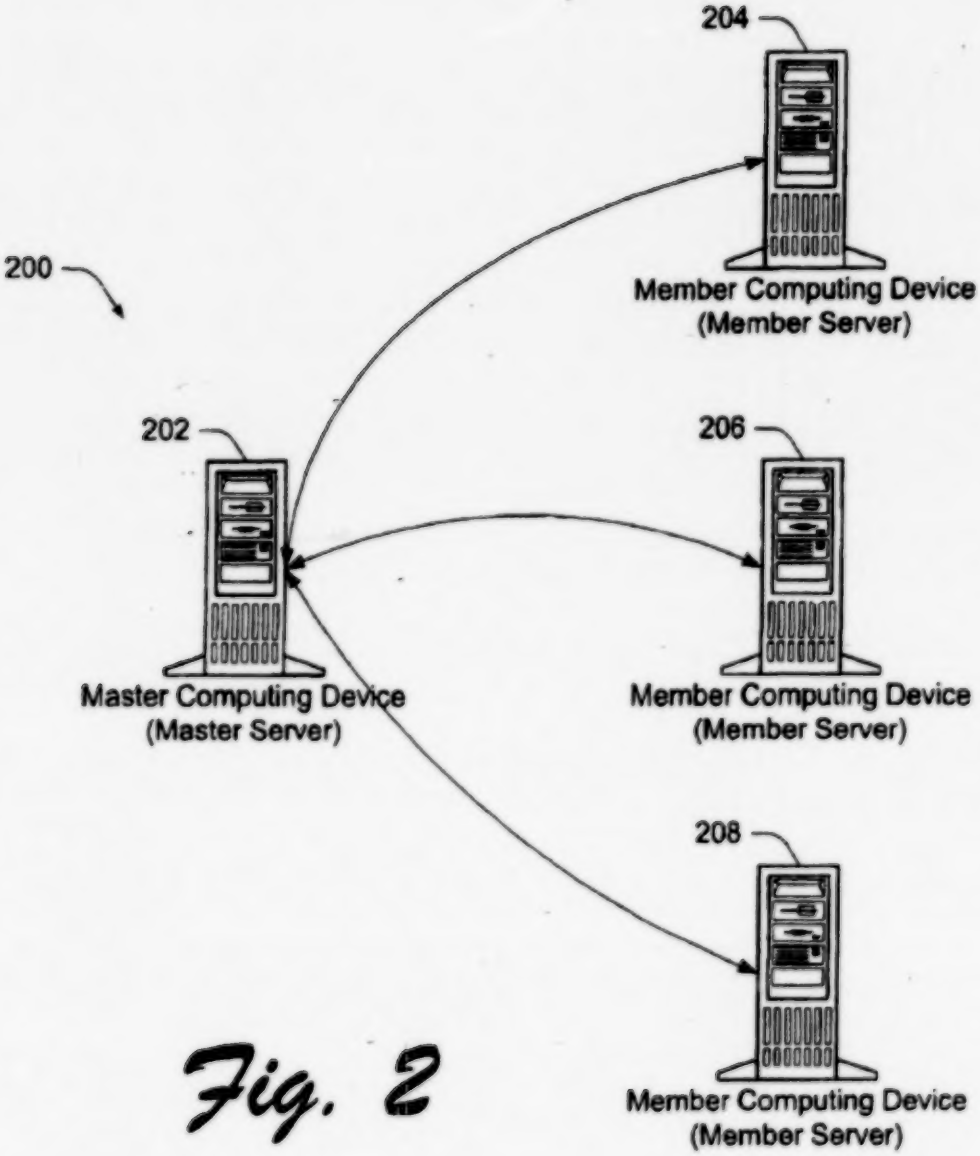

200
202
Master Computing Device
(Master Server)
204
Member Computing Device
(Member Server)
206
Member Computing Device
(Member Server)
208
Member Computing Device
(Member Server)

Fig. 2

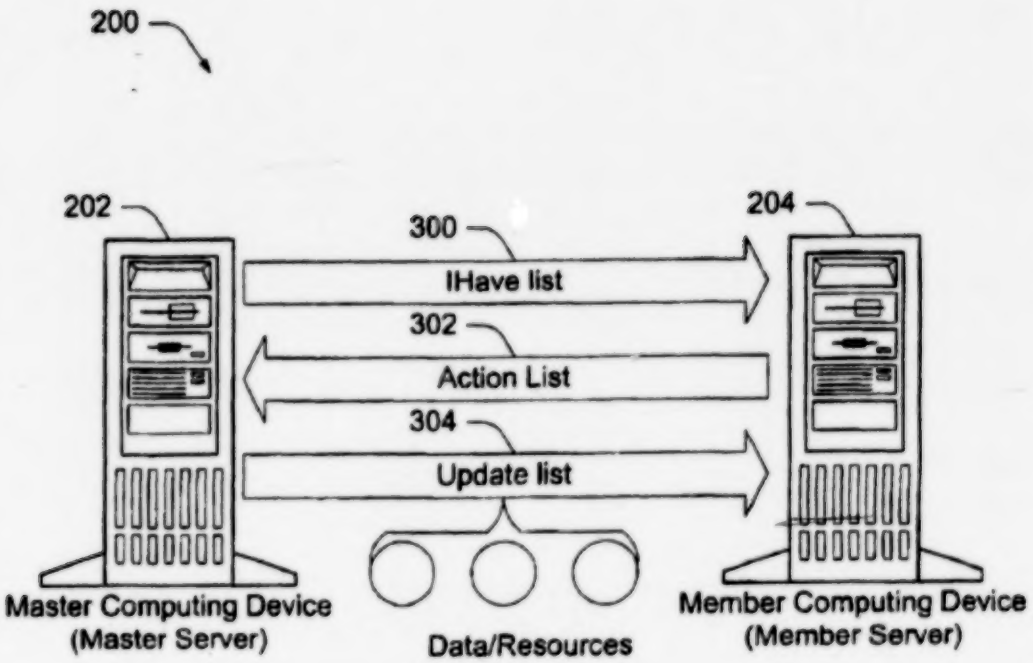

200
202
204
300
IHave list
302
Action List
304
Update list
Master Computing Device
(Master Server)
Data/Resources
Member Computing Device
(Member Server)

Fig. 3

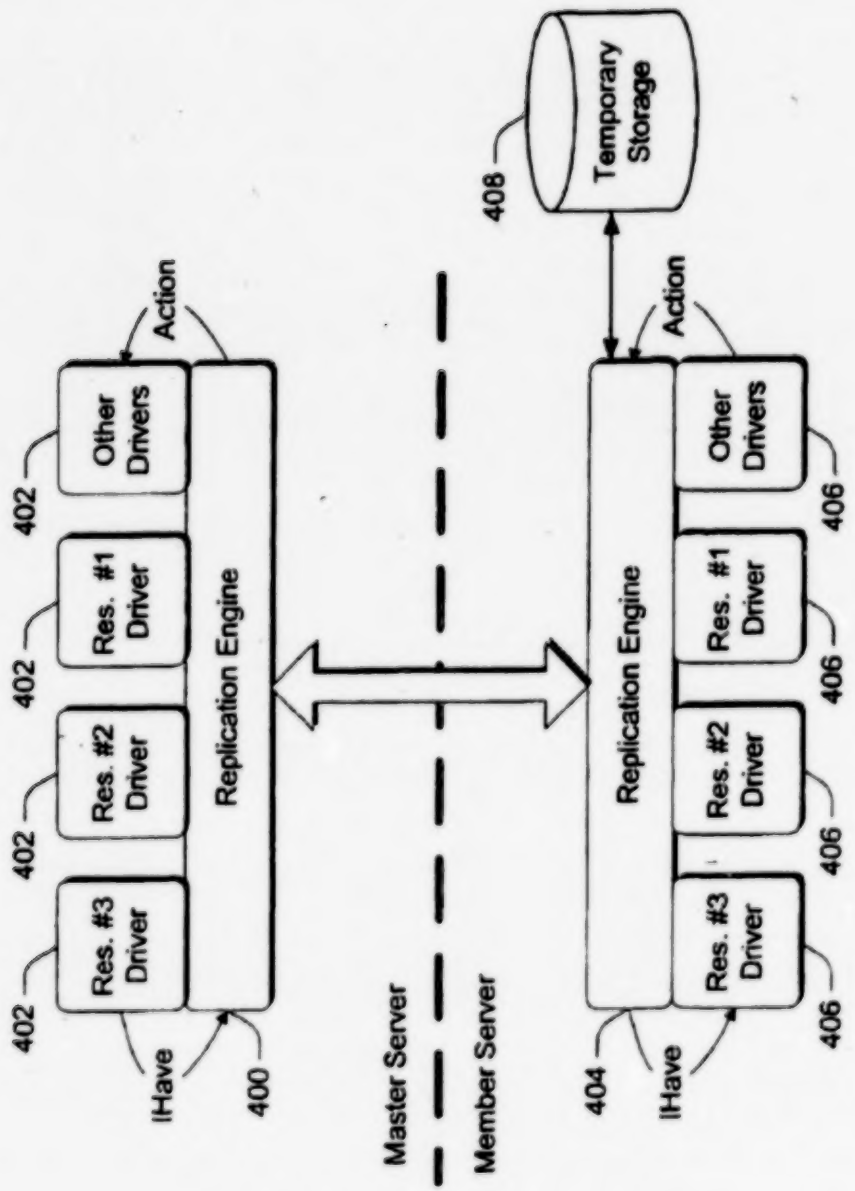

Temporary Storage
408
Action
Other Drivers
Res. #1 Driver
Res. #2 Driver
Res. #3 Driver
Replication Engine
402
IHave
400
Master Server
Member Server
404
406

Fig. 4

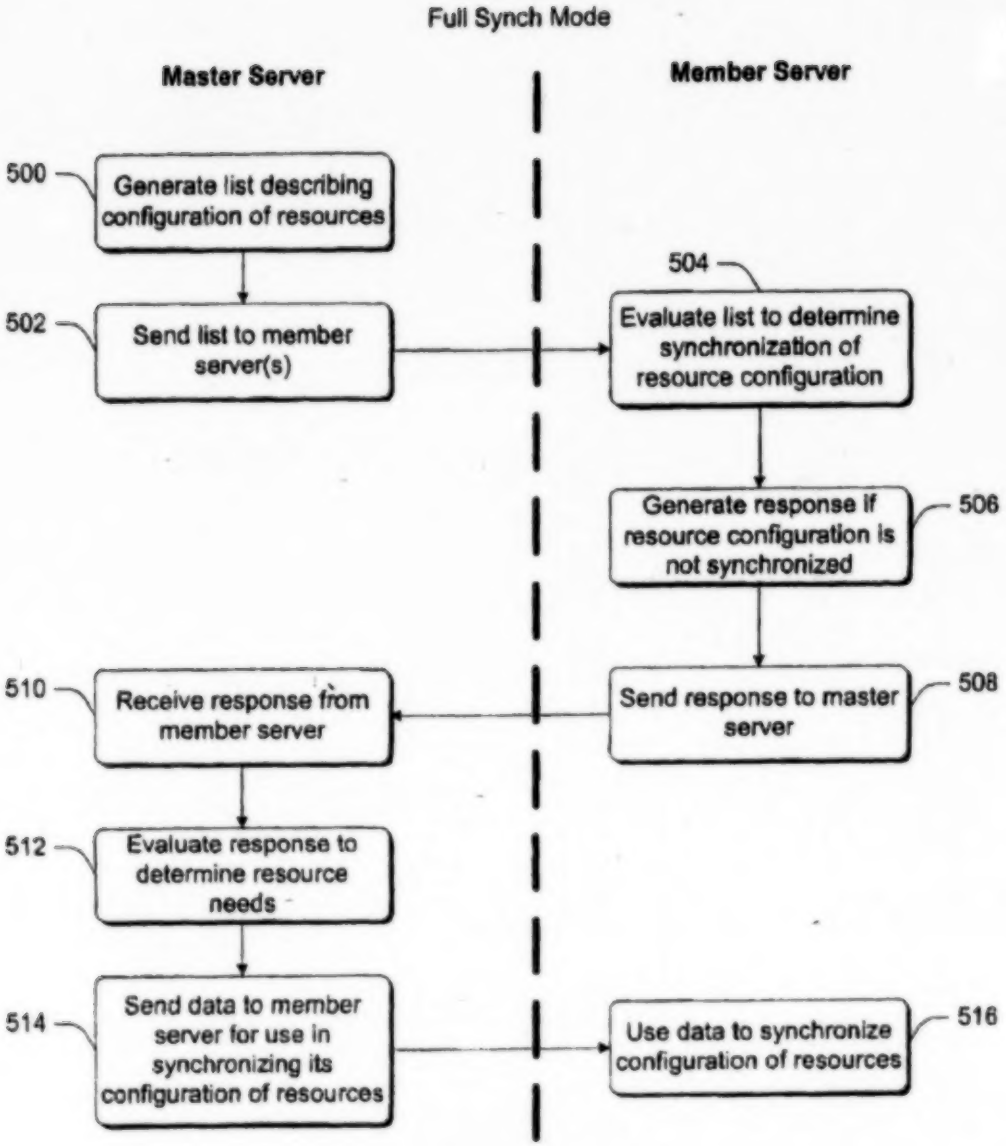

Full Synch Mode
Master Server
Member Server
500
Generate list describing configuration of resources
502
Send list to member server(s)
504
Evaluate list to determine synchronization of resource configuration
Generate response if resource configuration is not synchronized
506
Send response to master server
508
510
Receive response from member server
512
Evaluate response to determine resource needs
514
Send data to member server for use in synchronizing its configuration of resources
Use data to synchronize configuration of resources
516

Fig. 5

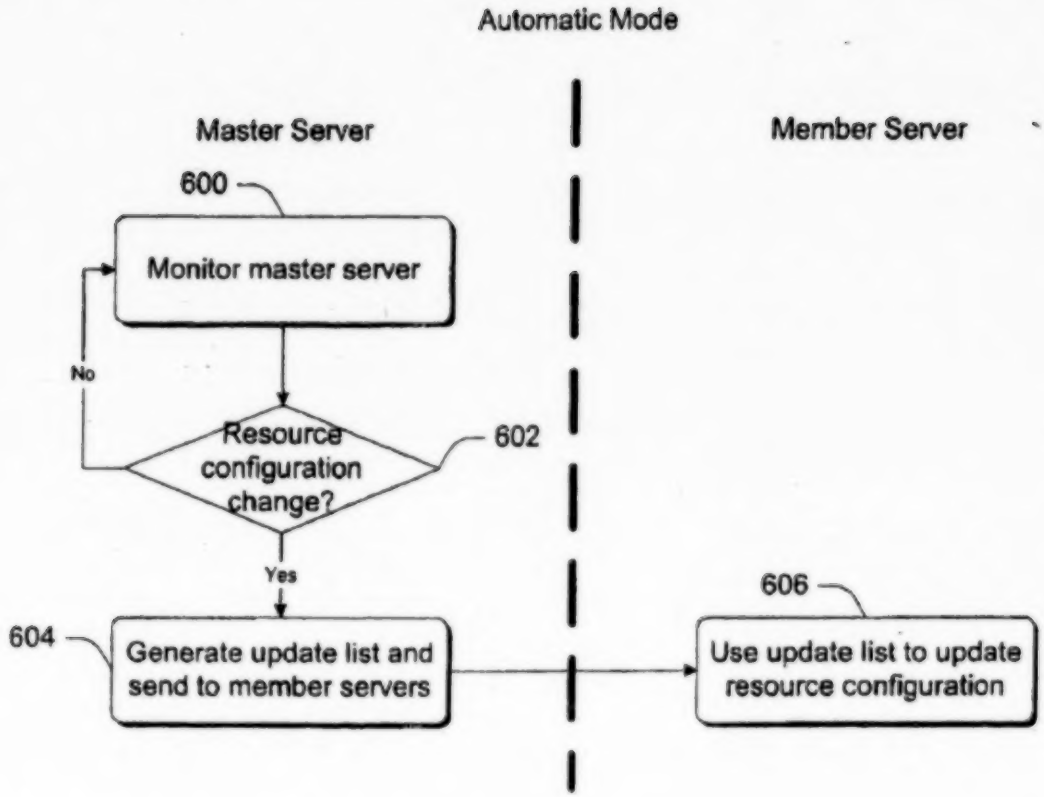

Automatic Mode
Master Server
Member Server
600
Monitor master server
No
Resource configuration change?
602
Yes
604
Generate update list and send to member servers
606
Use update list to update resource configuration

Fig. 6

METHODS AND SYSTEMS FOR SYNCHRONIZING MULTIPLE COMPUTING DEVICES

TECHNICAL FIELD

This invention relates to methods and systems for synchronizing multiple computing devices. In particular, the invention relates to methods and systems for synchronizing multiple different web servers.

BACKGROUND

As the popularity of networked systems, e.g. distributed computing systems, continues to grow and find use in contemporary times, there is an ever increasing need to ensure that certain computing devices within such systems are synchronized. By "synchronized" it is meant that the configuration of resources that each computing device uses to perform its job are the same, and that any associated resource settings are standard across all of the computing devices. Specifically, many times, due to scalability issues (i.e. adding additional computing devices to service a larger or growing client base), it becomes desirable to implement a particular functionality across multiple computing devices. In these instances it is highly desirable for each different computing device to operate identically. This is important because it is likely that different clients will be serviced by different computing devices. Accordingly, it is highly desirable for each client to receive the same service and be able to accomplish the same tasks even though they are using different computing devices. In order for the computing devices to operate identically, the pertinent resource configurations should be the same across all of the computing devices. Yet, often times this is not the case. When the configuration of resources is not standardized, inconsistent results can occur.

As a more concrete example, consider the case of a computing device in the form of a server that is programmed to function as a Web server. The World Wide Web or "Web" works on a client/server model in which client software—known as a Web browser—runs on a local computer. The server software runs on a Web server. Client machines effect transactions with Web servers using Hypertext Transfer Protocol (HTTP), which is a known application protocol providing users with access to files (e.g., text, graphics, images, sound, video, etc.) using a standard page description language known as Hypertext Markup Language (HTML). HTML provides basic document formatting and allows the developer to specify "links" to other servers and files. In the Internet paradigm, a network path to a server is identified by a so-called Uniform Resource Locator (URL) having a special syntax for defining a network connection. Use of an HTML-compatible browser (e.g., Internet Explorer) at a client machine involves specification of a link via the URL. In response, the client makes a request to the server identified in the link and receives in return a document formatted according to HTML. The Web server is usually a standalone file server that services various Web document requests. One particular type of Web server is Microsoft's Internet Information Server (IIS).

One of the problems that has arisen, and one which is particularly illustrated in the context of Web servers, is that customers often need to scale Web servers so that its services are widely available and highly reliable. One way of doing this is to incorporate multiple servers into a networked system. Each of the individual servers should operate identically in order for the same services to be rendered regardless of which server is used to the render services. In order for the servers to operate identically, their resource configurations should be the same. If the resource configurations are not the same, then inconsistent results can occur. Computing devices such as Web servers can typically have many different types of resources and settings. As an example, Microsoft's IIS has resources that include, but are not limited to files, metabase entries, registry keys, and cryptographic functions. Current solutions are inadequate to solve the problems of synchronizing multiple servers. For example, there are solutions that copy files from one server to another, or that replicate a resource setting from one machine to another, but these solutions fall far short synchronizing non-file resources and, in particular, multiple different resources and settings.

Accordingly, this invention arose out of concerns associated with providing systems and methods for synchronizing resource configurations across multiple computing devices.

SUMMARY

Methods and systems for synchronizing a configuration of resources across multiple computing devices are described. In the described embodiment, a computer network comprises a master computing device and a plurality of additional computing devices communicatively linked with the master computing device. The master computing device comprises a configuration of resources that are desired to be synchronized across the additional computing devices. The master computing device is configured to develop a set of lists that describe aspects of its configuration of resources. Each additional computing device is configured to receive the lists that are developed by the master computing device and evaluate the lists to determine whether its particular configuration of resources are synchronized with those of the master computing device. If a particular additional computing device's configuration of resources is not synchronized with those of the master computing device, the additional computing device prepares a second set of lists that describe its resource configuration needs and sends the second set of lists to the master computing device. The master computing device receives the second list set, evaluates it, and sends data to the corresponding additional computing device for use in synchronizing its configuration of resources. Each of the additional computing devices can send separate independent lists that describe their resource needs and the master computing device is capable of individually responding to each one. In one aspect, the computing devices are computer servers that are configured as Web servers.

One aspect provides a server software architecture that comprises a replication engine to handle communication between a master server and a plurality of member servers. At least one driver is provided and is capable of communicating with the replication engine. The driver is associated with a particular resource type (a.k.a. store) that is accessible from the master server. Resources could potentially be stored on a remote location (e.g., a remote file system). In the described embodiment, each resource type of interest has its own separate driver that is programmed to interact with it. Each driver is configured to prepare lists that describe characteristics of its associated resource and articulate the lists to the replication engine. The replication engine is configured to receive the lists from the driver(s) and send the lists to one or more of the member servers so that the member servers can use the lists to synchronize a resource that corresponds to the resource with which the driver(s) is

associated. In the described embodiment, each of the member servers has an architecture that mirrors the architecture of the master server. Accordingly, each member server has a replication engine to handle communication with the master server, and a collection of member servers drivers that are individually associated with different resource types that are resident on the member server. Each of the member server drivers is configured to evaluate the resources with which it is associated in response to its replication engine receiving a list from the master server's replication engine. The member server driver then determines whether its resources are synchronized with a corresponding resource on the master server. The member server driver is further configured to prepare a response to the master server that describes resource needs of the member server in the event that a resource is determined not to be synchronized with the corresponding resource on the master server. The master server receives the response with its replication engine and passes the response to the corresponding master server driver that is associated with the resource of interest. The master server driver then prepares a reply to the response that includes data that can be used by the member server driver to update or synchronize its resource type. The reply is sent to the member server and processed by the member server's replication engine. The replication engine passes the reply to the appropriate driver so that the driver can synchronize the resource of interest.

Another aspect automatically synchronizes resource configurations across multiple computing devices so that any time a resource configuration is updated or changed on, a master computing device, those changes get promulgated to a plurality of member servers. In the described embodiment, promulgation of the resource configuration changes takes place in a list-based manner.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a diagram of an exemplary computing device that can be utilized to implement one or more computing devices in accordance with the described embodiment.

FIG. **2** is a network diagram that illustrates exemplary computing devices in the form of a master server and a plurality of member servers in accordance with the described embodiment.

FIG. **3** is a diagram that illustrates an exemplary information exchange between a master computing device and a member computing device in accordance with the described embodiment.

FIG. **4** is a diagram of an exemplary software architecture in accordance with the described embodiment.

FIG. **5** is a flow diagram that describes steps in a method in accordance with the described embodiment.

FIG. **6** is a flow diagram that describes steps in a method in accordance with the described embodiment.

DETAILED DESCRIPTION

Exemplary Computing Device

Preliminarily, FIG. **1** shows a general example of a computer **130** that can be used in accordance with the described embodiment. Computer **130** can be utilized to implement various computing devices in accordance with the described embodiment.

Computer **130** includes one or more processors or processing units **132**, a system memory **134**, and a bus **136** that couples various system components including the system memory **134** to processors **132**. The bus **136** represents one or more of any of several types of bus structures, including a memory bus or memory controller, a peripheral bus, an accelerated graphics port, and a processor or local bus using any of a variety of bus architectures. The system memory **134** includes read only memory (ROM) **138** and random access memory (RAM) **140**. A basic input/output system (BIOS) **142**, containing the basic routines that help to transfer information between elements within computer **130**, such as during start-up, is stored in ROM **138**.

Computer **130** further includes a hard disk drive **144** for reading from and writing to a hard disk (not shown), a magnetic disk drive **146** for reading from and writing to a removable magnetic disk **148**, and an optical disk drive **150** for reading from or writing to a removable optical disk **152** such as a CD ROM or other optical media. The hard disk drive **144**, magnetic disk drive **146**, and optical disk drive **150** are connected to the bus **136** by an SCSI interface **154** or some other appropriate interface. The drives and their associated computer-readable media provide nonvolatile storage of computer-readable instructions, data structures, program modules and other data for computer **130**. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk **148** and a removable optical disk **152**, it should be appreciated by those skilled in the art that other types of computer-readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, random access memories (RAMs), read only memories (ROMs), and the like, may also be used in the exemplary operating environment.

A number of program modules may be stored on the hard disk **144**, magnetic disk **148**, optical disk **152**, ROM **138**, or RAM **140**, including an operating system **158**, one or more application programs **160**, other program modules **162**, and program data **164**. A user may enter commands and information into computer **130** through input devices such as a keyboard **166** and a pointing device **168**. Other input devices (not shown) may include a microphone, joystick, game pad, satellite dish, scanner, or the like. These and other input devices are connected to the processing unit **132** through an interface **170** that is coupled to the bus **136**. A monitor **172** or other type of display device is also connected to the bus **136** via an interface, such as a video adapter **174**. In addition to the monitor, personal computers typically include other peripheral output devices (not shown) such as speakers and printers.

Computer **130** commonly operates in a networked environment using logical connections to one or more remote computers, such as a remote computer **176**. The remote computer **176** may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to computer **130**, although only a memory storage device **178** has been illustrated in FIG. **1**. The logical connections depicted in FIG. **1** include a local area network (LAN) **180** and a wide area network (WAN) **182**. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets, and the Internet.

When used in a LAN networking environment, computer **130** is connected to the local network **180** through a network interface or adapter **184**. When used in a WAN networking environment, computer **130** typically includes a modem **186** or other means for establishing communications over the wide area network **182**, such as the Internet. The modem **186**, which may be internal or external, is connected to the

bus **136** via a serial port interface **156**. In a networked environment, program modules depicted relative to the personal computer **130**, or portions thereof, may be stored in the remote memory storage device. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

Generally, the data processors of computer **130** are programmed by means of instructions stored at different times in the various computer-readable storage media of the computer. Programs and operating systems are typically distributed, for example, on floppy disks or CD-ROMs. From there, they are installed or loaded into the secondary memory of a computer. At execution, they are loaded at least partially into the computer's primary electronic memory. The invention described herein includes these and other various types of computer-readable storage media when such media contain instructions or programs for implementing the steps described below in conjunction with a microprocessor or other data processor. The invention also includes the computer itself when programmed according to the methods and techniques described below.

For purposes of illustration, programs and other executable program components such as the operating system are illustrated herein as discrete blocks, although it is recognized that such programs and components reside at various times in different storage components of the computer, and are executed by the data processor(s) of the computer.

Overview

The methods and systems described below provide a simple, flexible approach to maintaining a configuration of resources synchronized across multiple computing devices. For purposes of this document, a "configuration of resources" will be understood to include either or both of a collection of resources that a computing device utilizes to implement its functionality, or various resource settings that can be set relative to a resource. Although the described embodiment is described in the context of a computing device that comprises a server and, in particular a web server, it is to be understood that the principles of the described invention should not be so limited. Accordingly, the principles described below are applicable to various other types of computing devices.

For purpose of understanding what constitutes an exemplary "resource", consider Microsoft's Internet Information Server (IIS). There, resources can include, without limitation, files, metabase entries, registry keys, and cryptographic functionality (e.g. certificate stores and the like). A "setting" can constitute any type of setting for a resource. For example, consider that a user creates an application and desires to store the number of threads to use for that application. The "number of threads" can be considered as a "setting" that might typically be stored in the computer's registry (a store).

One advantage of the described embodiment is its ability to promulgate resource configuration changes for any type of resource throughout system of multiple computing devices. The inventive systems and methods are extensible and provide a degree of flexibility that far exceeds the capabilities of other attempts at synchronization (i.e. merely copying files from one machine to another).

In the described embodiment, two different modes can be utilized to ensure that resources across multiple computing devices remain synchronized. A so-called "full synch" mode can be used to initialize a plurality of different machines to synchronize to a master computing device. This ensures that all of the computing devices in a particular network configuration are standardized. After that an "automatic" mode monitors the master computing device so that any time a change is made to one of its resources, that change is promulgated down through the other computing devices. This, as the name implies, happens automatically without user intervention. In addition, the "full-synch" mode can be utilized to periodically update or "resync" the computing devices so that any resources that have been changed (other than resources on the master computing device) can be placed back into a state which is synchronized with that of the master computing device.

FIG. **2** shows a computer network **200** which, in accordance with the described embodiment comprises a master computing device **202** and a plurality of additional computing devices **204, 206, 208** communicatively linked with master computing device **202**. The master computing device **202** comprises a configuration of resources that are desired to be synchronized across the additional computing devices **204–208**. In the "full synch" mode, the master computing device **202** develops lists that describes aspects of its configuration of resources and sends the lists to the additional computing devices **204–208**. Each additional computing device **204–208** receives the lists and evaluates the lists to determine whether its particular configuration of resources are synchronized with those of the master computing device. If a particular additional computing device's configuration; of resources is not synchronized with those of master computing device **202**, the additional computing device prepares a second set of lists that describes its resource configuration needs and sends, the second set of lists to master computing device **202**. The communication between the master computing device and the additional or member computing devices is indicated by the double-headed arrows in FIG. **2**. The master computing device **202** receives the second set of lists, evaluates it, and sends data (e.g. in the form of resources or settings) to the corresponding additional computing device for use in synchronizing its configuration of resources. Each of the additional computing devices **204–208** can send separate independent lists that describe their own particular resource needs and the master computing device **202** is capable of individually responding to each one. In the "automatic" mode, changes in the master computing device's configuration of resources are detected and then data is sent to each of the additional computing devices **204–208** for use in synchronizing its configuration of resources.

One particularly advantageous aspect of the described embodiment is that communication takes place between the master computing device and the additional computing devices through the use of extensible markup language (XML) techniques. Here, XML lists can be sent back and forth between the master computing device and the additional computing devices. The XML lists can either contain embedded update material for use in synchronizing resource configurations, or can reference particular resources that are to be updated using data that is either previously or subsequently sent. It should be appreciated that any format that is capable of describing a hierarchical list of objects would do and that the use of XML represents but one exemplary way of doing so.

One aspect provides a server software architecture that facilitates communication between a master server and additional member servers. In the described embodiment, a replication engine is provided and handles communication between the master server and the member servers. At least

one driver is provided and is capable of communicating with the replication engine. The driver is associated with a particular resource type that is accessible from the master server. In the described embodiment, each resource type of interest (there can be many resource types) has its own separate driver that is programmed to interact with it. Each driver is responsible for reading and writing its own content type, as well as other functions. For example, each driver is responsible for preparing a set of lists that describes characteristics of its associated resource and articulating the lists to the replication engine. The replication engine receives the lists from the driver(s) and sends the lists to one or more of the member servers **204–208** so that the member servers can use the lists to synchronize a resource that corresponds to the resource with which the driver(s) is associated.

In the described embodiment, each of the member servers comprises a software architecture that mirrors the software architecture of the master server. Accordingly, each member server has a replication engine to handle communication with the master server, and a collection of member server drivers that are individually associated with different resources that are resident on the member server. Each of the member server drivers evaluates the resource with which it is associated in response to its replication engine receiving a list from the master server's replication engine. The member server driver determines whether its associated resource is synchronized with a corresponding resource on the master server. The member server driver prepares a response to the master server that describes its resource needs in the event that a resource is determined not to be synchronized with the corresponding resource on the master server. In the described embodiment, each member server responds separately, with the separate responses being queued for transmission as one unit for greater efficiency. The master server receives the response with its replication engine and passes the response to the corresponding master server drivers that are associated with the resources of interest. The master server driver prepares a reply to the response that includes data that can be used by the member server driver to update or synchronize its resource. The reply is sent to the member server and processed by the member server's replication engine. The replication engine passes the reply to the appropriate member server driver so that the driver can synchronize the resource of interest.

List-Based Exchange

FIG. **3** shows master computing device or master server **202** and member computing device or member server **204**, and an exemplary communication exchange between them in more detail. The communication exchange facilitates synchronizing the member servers. In the described embodiment, member server resource configurations are synchronized with resource configurations of the master server through the use of one or more lists that are passed between the servers. Any suitable communication or list can be used in the information exchange between the servers, with an exemplary type of list being discussed below in the section entitled "Extensible Markup Language Lists".

In the illustrated example, master server **202** comprises a configuration of resources that define the content and settings for the master server. Exemplary content and settings were mentioned above. The master server's configuration of resources is desired to be promulgated to other servers, e.g. member server **204**, so that the master and member servers can implement a common functionality. In this example, the common functionality that is implemented by the master and member servers is that of a web server. Other functionalities can, of course, be implemented.

The master server **202** is configured to develop a list that describes aspects or characteristics of its configuration of resources. In the illustrated example, an exemplary list **300** is shown as an "IHave" list. This list describes the resources that the master server has—hence the name "IHave". Exemplary aspects or characteristics can include, without limitation, individual signatures that represent one or more of the particular resources. For example, a hash can be made of a particular resource, e.g. a file, and thus constitutes the signature for that resource. Another example of a signature is a date/time stamp. Any type of suitable aspect or characteristic can be used and incorporated in the list that is developed by the master server. In many instances it is desirable to use an aspect or characteristic that represents the resource of interest, yet takes up less room, e.g. in a buffer, than the resource. This enables faster processing than if the entire resource were used. It is possible in some circumstances, for the aspect or characteristic to comprise the resource itself.

Each of the member servers **204** is communicatively linked with the master server **202** and comprises a configuration of resources that correspond, at least in part, to the configuration of resources of the master server **202**. For example, it is possible in some instances for the configuration of resources on one or more of the member servers to have been changed for whatever reason. In this instance, the member server's configuration of resources would not correspond entirely with the master server's configuration of resources. As another example, it is possible for the master server's configuration of resources to have been changed, e.g. adding or deleting a resource. In each of these instances it is highly desirable for the master server's configuration of resources to be promulgated to the member servers so that standardization is preserved.

Each of the member servers **204** is configured to receive the list that is developed by the master server **202** and evaluate the list to determine whether its particular configuration of resources are synchronized with those of the master server. For example, each member server can use the aspects or characteristics that are contained in the list to evaluate their own resources. For example, where the list contains a hash of one or more resources, a member server can make a hash of its corresponding resources using the same hashing algorithm and then simply compare the hashes. Alternately, if a date/time stamp is used, the member server can simply compare the date/time stamps of its associated resources with the date/time stamps contained in the list. If any differences are found during this evaluation, the member server will know that one or more of its resources are not synchronized with the corresponding resource on the master server **202**.

In the event that one or more of the member servers **204** determines, through its evaluation of the list provided by the master server **202**, that its configuration of resources is not synchronized, the member server is configured to communicate any of its resource needs to the master server **202**. In the illustrated example, the member server **204** does so by building a second list **302**, referred to in the illustration as an "Action list". The Action list **302** describes the resource or resource configuration needs of the member server. The member server **204** sends the Action list **302** to the master server **202** for evaluation. The Action list **302** requests data in the form of resources or resource settings that will enable the member server to synchronize itself with the configuration of resources of the master server **202**. When the master server **202** receives this communication from the member servers, it evaluates the Action list **302** to determine the

resource configuration needs of the particular individual member servers. Responsive to its evaluation of the Action list **302**, the master server **202** sends the necessary needed data to the member server **204** so it can synchronize its configuration of resources with that of the master server. In the illustrated example, the data that is sent from the master server to the member server can be sent in an Update list **304**. The Update list can contain data that describes various resource configuration settings (e.g. the number of threads that a particular application can use) as well as data that represents the resources themselves (e.g. files, certificates and the like). It is also possible for the Update list to merely describe the resources that are going to be sent, with the resources being separately sent in a different communication between the master server **202** and the member server **204** (e.g. large files that might be more economically sent using a different protocol).

In the described embodiment, member servers can be updated in a couple of different ways. In a "full synch" mode, the master server initially sends an IHave list **300** to each of the member servers for the server to do their own evaluation. The member servers evaluate their resource configurations in view of the list and take any measures that are necessary to ensure that they are synchronized with the master server. This process was described immediately above. The full synch mode can advantageously be used to initialize the member servers. Another mode referred to as an "automatic mode" is used by the master server to automatically update the member servers with resource specific changes. For example, if a particular resource is modified on the master server, data associated only with the changed resource can be sent to the member servers so that they can individually update their corresponding resource.

Extensible Markup Language Lists

As mentioned above, communication between the master server and the member server can take place in any suitable manner. It has been found particularly advantageous, however, to use lists that are defined in terms of extensible markup language (XML). The use of XML greatly facilitates generating, handling, and passing the lists back and forth between the master and member servers.

Extensible Markup Language (XML) is a meta-markup language that provides a format for describing structured data. XML is similar to HTML in that it is a tag-based language. By virtue of its tag-based nature, XML defines a strict tree structure or hierarchy. XML is a derivative of Standard Generalized Markup Language (SGML) that provides a uniform method for describing and exchanging structured data in an open, text-based format. XML utilizes the concepts of elements and namespaces. Compared to HTML, which is a display-oriented markup language, XML is a general purpose language for representing structured data without including information that describes how to format the data for display.

XML "elements" are structural constructs that consist of a start tag, an end or close tag, and the information or content that is contained between the tags. A "start tag" is formatted as "<tagname>" and an "end tag" is formatted as "</tagname>". In an XML document, start and end tags can be nested within other start and end tags. All elements that occur within a particular element must have their start and end tags occur before the end tag of that particular element. This defines a strict tree-like structure. Each element forms a node in this tree, and potentially has "child" or "branch" nodes. The child nodes represent any XML elements that occur between the start and end tags of the "parent" node.

XML accommodates an infinite number of database schemas. Within each schema, a "dictionary" of element names is defined. The dictionary of element names defined by a schema is referred to as a "namespace." Within an XML document, element names are qualified by namespace identifiers. When qualified by a namespace identifier, a tag name appears in the form "[namespace]:[tagname]". This model enables the same element name to appear in multiple schemas, or namespaces, and for instances of these duplicate element names to appear in the same XML document without colliding. Start tags can declare an arbitrary number of "attributes" which declare "property values" associated with the element being declared. Attributes are declared within the start tag using the form "<[tagname] [attribute1] [attribute2]. . . [attributeN]>", where an attribute1 through attributeN are declarations of an arbitrary number of tag attributes. Each attribute declaration is of the form "[attributeName]=["attributeValue"]" where each attribute is identified by a unique name followed by an "=" character, followed by the quoted value of the attribute.

Exemplary IHave List

Recall that the IHave list is used by the master server to describe the resources or configuration of resources that each of the member servers should have. The IHave list is built by the master server and then sent to each of the member servers so that they can evaluate their own content and settings. In the described embodiment, the IHave list can include the following selected tags and attributes. It is to be understood that the following table constitutes but one way of implementing the IHave list using XML. Accordingly, other ways of implementing the IHave list either using or not using XML are possible. Optional tags or attributes are enclosed in "[ ]".

Tag	Attribute	Explanation
<SCOPE>	RESTYPE	Resource type
	[ENUM]	Either "partial" or "full". This indicates whether the interaction of all items and subnodes is complete. If ENUM is "full", an item or node that is not in this list should be deleted from the member server. If ENUM is "partial" then an item or node that is not in the list is not to be deleted.
	ROOT	Defines the absolute root path.
	TYPE	Defines the type of list, e.g. IHAVE, ACTION, UPDATE.
	[DIFFUSION]	Either "unicast" or "multicast". Indicates how the list is to be dispensed. "Unicast" lists get sent to only one member server while "multicast" lists get sent to many member servers.
	[LAST]	Either "0" or "1". Indicates whether this is the last of a list sequence or not.
	[ETAGTYPE]	This is utilized to ensure that the content is the same with a high degree of probability. This controls the tradeoff between ETAG computation cost and the probability of generating the same ETAG for different content. Values can include "strong" and "weak"
	ITEMSIZE	Total size of all data associated with all items.
	ITEMCOUNT	Count of all items.

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Tag	Attribute	Explanation
<NODE>		This tag essentially defines a hierarchy under the root or parent.
	SUBPATH	Sub path relative to the father node.
	[ENUM]	Either "partial" or "full". If "full", then only data defined by the sub-tree exists, i.e. everything else is to be deleted.
<ITEM>		Defines the granularity of the replication, e.g. a file.
	NAME	Name inside the node.
	ETAG	Opaque signature of a resource. Can be based on a hash, date/time, etc.
	SIZE	Size of all the data associated with this item.

As an exemplary portion of an IHave list that incorporates the above tags and some or all of the attributes, consider the following:

```
<SCOPE TYPE="IHAVE" LAST="0" RESTYPE="FS" ROOT="c:\inetpub"
       ETAGTYPE="STRONG"   ITEMSIZE="8810"   ENUM="FULL"
       ITEMCOUNT="2" DIFFUSION="MULTICAST"
   <NODE SUBPATH="wwwroot" ENUM="FULL">
    <ITEM NAME="default.asp" ETAG="67ED89B" SIZE="345"></ITEM>
    <ITEM NAME="myimg.jpg" ETAG="5656365" SIZE="8465"></ITEM>
    <NODE SUBPATH="Images"/>
    <NODE SUBPATH="Apps"/>
   </NODE>
</SCOPE>
<SCOPE TYPE="IHAVE" RESTYPE="FS" ROOT="c:\inetpub\wwwroot"
       ETAGTYPE="STRONG"   ITEMSIZE="4"   ITEMCOUNT="1"
       DIFFUSION="MULTICAST"
   <NODE SUBPATH="Images" ENUM="FULL">
    <ITEM NAME="Images.jpg" ETAG="46ED89B" SIZE="4"></ITEM>
   </NODE>
</SCOPE>
```

The exemplary IHave list describes file resources that the master server has in the root "c:/inetpub". Here, the XML list is the last of the XML lists that are being sent. The resource type ("FS") with which the list is associated is a file resource. The RESTYPE is used to identify how and where the list is processed. This will become more apparent below as one exemplary software architecture is described. There are two items (i.e. files) in the subroot "c:/inetpubwwwroot" that are of interest. In addition, there are two subpaths or subdirectories (i.e. Images and Apps). The enumeration for the root "c:/inetpub" is "full" which means that if a particular resource is not described in the IHave list, it is to be deleted from the member server. With respect to the individual file resources, a first of the files is "default.asp" and a second of the files is "myimg.jpg". Each of the files has an associated ETAG which is a signature that represents the file. The signature is compared by the member server to its own corresponding file resource signature to determine whether its file resource is synchronized with the master server resource. The subpath "Images" (represented by the second portion of the XML list) includes one file "Images.jpg" having the indicated ETAG and size.

Exemplary Action List

Once the member server has received the IHave list from the master server and evaluated its resources accordingly, it prepares an Action list that describes its resource needs for the master server. That is, if any of the subject resources are determined to be unsynchronized with the master server's resources, then the member server uses the Action list to articulate its resource needs to the master server. The, selected tags and attributes for the Action list are generally the same as the tags and attributes for the IHave list. The Action list does not, however, contain an ETAG attribute. As an exemplary Action list that responds to the IHave list above, consider the following:

```
<SCOPE TYPE="ACTION" LAST="0" RESTYPE="FS" ROOT="c:\inetpub"
       ITEMSIZE="8810" ENUM="FULL" ITEMCOUNT="2"
   <NODE SUBPATH="wwwroot" ENUM="FULL">
    <ITEM      NAME="default.asp"          SIZE="345"
UPDATETIME="7435:73853"><STREAM/></ITEM>
   </NODE>
</SCOPE>
<SCOPE TYPE="ACTION" RESTYPE="FS" ROOT="c:\inetpub\wwwroot"
       ITEMSIZE="0" ITEMCOUNT="1">
   <NODE SUBPATH="Images" ENUM="FULL">
    <ITEM NAME="Images2.jpg"><ATTRIBUTES/></ITEM>
   </NODE>
</SCOPE>
```

In the above example, a member server has determined based upon its evaluation of the IHave list that it needs two

things to be synchronized. First it needs the file "default.asp", and second it needs the file-system attribute associated with the file "Images2.jpg". The "stream" designation indicates that the member server has requested the actual file itself. Once the member server has built the Action list, it sends the Action list to the master server so that the master server can evaluate the resource needs to the member server and respond to them accordingly.

Exemplary Update List

After the master server receives the Action lists from a member server, it evaluates the member server's resource needs and responds to the member server. In the illustrated example, the master server responds with an Update list. With the Update list, the master server can either embed the needed resource data in the list itself, or, simply reference resource data that was or is sent through an alternate means. As an example, consider the exemplary Update list below that responds to the above Action list.

```
<SCOPE TYPE="UPDATE" LAST="0" RESTYPE="FS" ROOT="c:\inetpub"
        ITEMSIZE="8810" ENUM="FULL" ITEMCOUNT="2"
    <NODE SUBPATH="\wwwroot" ENUM="FULL">
     <ITEM      NAME="default.asp"              SIZE="345"
UPDATETIME="7435:73853"><STREAM LINK="\wwwroot\default.asp"/>
    </ITEM>
    </NODE>
</SCOPE>
<SCOPE TYPE="UPDATE" RESTYPE="FS" ROOT="c:\inetpub\wwwroot"
        ITEMSIZE="0" ITEMCOUNT="1">
    <NODE SUBPATH="\Images" ENUM="FULL">
     <ITEM
NAME="Images2.jpg"><ATTRIBUTES>6574</ATTRIBUTES></ITEM>
    </NODE>
</SCOPE>
```

Here, the Update list responds to the Action list with the requested file "default.asp" and the requested attribute "6574". The requested file has been sent, in this example, through an alternate file transport mode. Only a link to the location where the alternate file transport will put the file content is stored. Thus, in this example, the Update list does not have any of the file data embedded within the XML tags. The attribute data, however, is embedded directly in the Update list between the "attributes" tags.

At this point in the process, all of the data that the member server needs has been prepared by the master server and sent to the member server. The member server can now take steps to ensure that the data is properly applied for synchronization.

Exemplary Architecture

When addressing the problem of synchronizing resource configurations among multiple different member servers, consideration must be given to the issue of work factorization. That is, how should the work that needs to be done to synchronize the servers actually get done? A balance or tradeoff can be achieved between the need to have resource-specific knowledge and the need to have general knowledge of the system.

FIG. **4** shows but one exemplary software architecture that can achieve the goal of synchronizing multiple member servers. In the illustrated example, the master server comprises a replication engine **400** and one or more master server drivers **402**. The replication engine **400** handles communication between the master server and a plurality of member servers. The replication engine **400** is also responsible for coordinating replications among the drivers **402**, authentication, error recovery, and transport. Each of the one or more master server drivers **402** is capable of communicating with the replication engine **400**. In the illustrated example, each individual driver **402** is associated with a different resource type that is accessible from the master server. The driver is responsible for actually reading and writing its resource type and comparing items within its namespace to determine whether they need to be updated. In addition, each driver is also responsible for informing the replication engine **400** when its corresponding resource has been updated and also in comparing a resource between the master server and a member server. In addition, other driver responsibilities may include such things as encryption, signature generation (and comparison), locking and unlocking the resource, failure (i.e. problems writing to the store) detection, recovery and reporting, and security.

On the member server side, the software architecture may be essentially a mirror image of the master server architecture. Specifically, the member server comprises a replication engine **404** and one or more member server drivers **406**. The collection of member server drivers **406** corresponds to the master server drivers. Accordingly, each member server driver is associated with both (a) a member server resource that corresponds to a particular resource that is resident on the master server, and (b) a master server driver that is associated with that particular resource on the master server. The replication engine **404** handles communication between the member server (i.e. member server drivers **406**) and the master server (i.e. replication engine **400**).

In the illustrated example, each of the master server drivers **402** is programmed to prepare or generate a list that describes aspects or characteristics of its associated resource type. Specifically, each master server driver **402** can prepare XML lists that are then articulated by the master server driver to the master server's replication engine **400**. There are typically multiple lists, one per namespace root per driver, e.g. FS:c:/sub1, FS:c:/sub2, etc. There are typically hundreds of lists for the file system (FS) driver. In the illustrated example, the combination of all these lists constitute the IHave list. The replication engine **400** receives a list from each driver **402**, and sends a concatenation of all lists to each of the member servers for use in synchronizing their resources.

Each member server's replication engine **404** receives the IHave lists, parses them, and sends each list to the appropriate driver **406** for processing. There may be more than one IHave list that occurs, but for the sake of simplicity, only one is described. Each of the member server drivers uses the

received list to evaluate its resource to determine whether it is synchronized with the corresponding resource on the master server. This can, in some instances, involve comparing the resource signatures with one another to determine whether there are any differences. If the evaluation determines that the resource with which the driver is associated is not synchronized with the corresponding master server resource, then the driver **406** prepares a response (i.e. an Action list) to the master server that describes its resource needs. Each driver's response portion is articulated to the replication engine **404** which formulates a combined response to the master server and then communicates the Action lists to the master server's replication engine. When the master server's replication engine receives the Action lists, it parses them and sends each of the Action list to the corresponding master server driver **402** for evaluation and processing. Each of the drivers **402** is then responsible for supplying the data that is necessary for the member server to synchronize itself. This data is sent by each driver **402** in the form of an XML list to the replication engine **400**. This data may only be a link describing a stream that is sent via a particular protocol. The replication engine **400** collects the various XML lists in the form of Update lists that are then sent to the member server's replication engine **404**. The replication engine **404** parses the Update lists and sends each list to the appropriate member server driver **406**. Each member server driver then commits the updates to a temporary storage **408** until a call is received from the master server informing the member servers to commit the changes.

Exemplary Application Program Interfaces

In the described embodiment, one or more application program interfaces (APIs) are utilized that enable the processing that is described above to take place. An application program interface comprises one or more semantically-related methods that perform particular functions. In the illustrated example, there are three groups of APIs of interest: an engine-to-engine API that enables communication between the replication engines, an engine-to-driver API that enables engine-to-driver communication, and a control API that controls the replication process. The latter API creates replication sessions, stores configurations for the replication processes and essentially controls the replication context.

IReplicationDriver

This interface is found on and implemented by each of the individual resource drivers. Each of the resource drivers is capable of generating IHave lists (master server content description), Action lists (member server requests for content) and Update lists (content updates to be applied on the member servers). This interface includes the following interface methods:

Method	Description
DefinePath( )	Invoked on the master server. Defines a point in a namespace on which to operate. This method is called to cause the drivers to generate an IHave list, an Action list, or an Update list depending on specified parameters.
ProcessIHaveList( )	Invoked on the member servers. This method enables the drivers to process the IHave list that has been provided by the master server. The drivers return an Action list if necessary.
ProcessActionList( )	Invoked on the master server. This method enables each driver to ascertain the resource needs of its corresponding member server driver. The driver returns an Update list to the engine after optionally transferring content (e.g. files) to the member server.
ProcessUpdateList( )	Invoked on the member server. Adds update list to current session for commitment at a later time.
BeginSession( )	Begins a new session. Multiple sessions can exist at a given time.
CommitSession( )	Method is called to commit the updates to permanent storage on the member server.
ReadyToCommitSession( )	A method that is called on the master & member server drivers before calling CommitSession( ) method on the member servers. Enables the drivers on the member servers to notify the engine of any errors that might prevent full deployment.
AbortSession( )	Aborts the current session, e.g. releases all queued Update lists.
ReadStoreProperty( )	Reads a store property.
WriteStoreProperty( )	Writes a store property.

IReplicationEngine

This interface is implemented by each replication engine. This API includes all notifications from drivers to engine and also exposes replication context (e.g. storage location during backup) to the engine. This API is also used for engine-to-engine communication (between the master server and the member servers). This interface includes the following interface methods:

Method	Description
ListNotify( )	Callback used by the driver. The driver uses this method to notify the engine with the various type of list that it has developed, e.g. Action lists are presented to ProcessActionList( ) on the master server, Update lists are presented to each member server using ProcessUpdateList( )
DefinePath( )	Analogous to IReplicationDriver interface.
SetServerList( )	Sets the server list to use as the target for replication.
BeginSession( )	Called by the master server engine on the member server engine. Begins a new session.
CommitSession( )	Called by the master server engine to the member server engines. Commits the current session and returns only when replicated data has been committed to permanent storage.
ReadyToCommitSession( )	Forwarded by the master server engine to the member server engines. Calls ReadyToCommitSession( ) on all drivers on both master and member drivers. This will take place only after ensuring that each driver during the replication session has generated its last Update list.
AbortSession( )	Forwarded by the master server engine to the member server engines. Aborts the current session.
GetReplicationInfo( )	Used to retrieve various information, e.g. roots of the backup storage area in a file system, identification of member server's replication engine, identification of replication ID for a particular replication session, etc.
TransferList( )	Called by the master server engine on the member server engine and by member

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Method	Description
	servers on the master server engine. Requests processing of a replication list (IHave, Action, Update).

IReplicationControl

This interface manages replication jobs. The interface can be accessed using a command line utility. This utility can take its parameter from either the command line or a file. The interface includes the following methods:

Method	Description
DefineReplication( )	This method defines a replication. It can be called to designate automatic updates, to replicate a farm configuration, to include content defined in the system replication definition, to designate a full synch update, to prevent ACLs (Access Control Lists) from being translated, to override replication, and the like.
DeleteReplication( )	Deletes an existing replication.
EditReplication( )	Allows any of the parameters that constitute a replication definition to be updated.
EnumReplications( )	Enumerates all defined replications.
GetReplicationInfo( )	Retrieves information that has been already defined, e.g. defined in DefineReplication( ).
CreateReplicationJob( )	This method will request an immediate replication by creating a replication job based on a replication definition.
AbortReplicationJob( )	Aborts an in-progress Replication Job.
EnumReplicationJob( )	Enumerates replication jobs.
GetReplicationJobInfo( )	Retrieves replication job information.
GetReplicationJobStatus( )	Returns the status for a specific replication job. There are two levels that return various degrees of information, e.g. level 1 returns the job state and status; level 2 adds a XML-formatted buffer filled with various information including total count of object to replicate and how many have been replicated thus far, object size, how much of the object has been transferred etc.
Backup( )	Initiates a full synch to a file path to enable backup.
EnumBackup( )	Enumerates all backups on a particular computer.
GetBackupInfo( )	Retrieves backup information.
Restore( )	Restores a backup on a particular computer.
DeleteBackup( )	Removes a backup on a particular computer.
NotifyStateChange( )	This method is called to signal a new member server state change to the master server.

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Method	Description
AbortAllReplicationJobs( )	Called on the master server and aborts all currently running replication sessions, including automatic sessions.
WaitForAllReplicationJobsCompletion( )	Called on the master server. Returns when all current replication sessions are completed or aborted.
StopReplication( )	Called on the master server and disables new replication sessions to be scheduled.
StartReplication( )	Called on the master server to start replication session scheduling and automatic sessions.
EnumDriver( )	Enumerates all of the drivers on a computer.
GetDriverAttr( )	Retrieves the value of a named attribute for a specific driver.
SetDriverAttr( )	Sets the value of a named attribute for a specific driver.
GetReplAttr( )	Retrieves the value of a named attribute.
SetReplAttr( )	Sets the value of a named attribute.

In Operation

In operation, the described embodiment provides a convenient, easy to implement way of maintaining synchronization across multiple computing devices. In the described example, the computing devices constitute web servers although it should be apparent that any suitable computing devices can be synchronized in accordance with the described embodiment. The described embodiments provide a way to synchronize resource types and content across multiple different computing devices.

FIG. **5** shows a flow diagram that described steps in a method in accordance with the described embodiment. Aspects of the illustrated method are implemented on both the master server side and the member server side. Although the method can be implemented in connection with any suitable hardware, software, firmware or combination thereof, the method can be advantageously implemented in connection with the architecture shown in FIG. **4**.

FIG. **5** shows processing that takes place in an exemplary "full synch" mode. Step **500** generates a set of lists that describes a configuration of resources that each of a plurality of computing devices should have in order to be synchronized with one another. In the illustrated example, a master server generates the list through the use of a plurality of resource drivers each of which is associated with a different resource. Each resource driver is responsible for generating their own individual lists that describes their resources and sending the lists to a master replication engine. The replication engine then assimilates all of the lists that are received from the various master server drivers. Step **502** sends the lists (IHave lists) that are prepared by the master server replication engine to each of a number of different member servers. When the member servers receive the lists, each member server evaluates the lists (step **504**) to determine whether their resource configuration is synchronized with that of the master server. In the illustrated example, each member server has a software architecture that mirrors the architecture of the master server. Accordingly, the lists are received by the member server's replication engine and

individual list are sent to the corresponding member server drivers for evaluation. If, as a result of the evaluation that takes place at the member server, it is determined that one or more resources are not synchronized with a corresponding resource on the master server, step **506** generates a response to the master server. In this example, each member server driver is responsible for their own individual resource evaluation as well as generating a portion of a response that is to be sent to the master server. The member server drivers send their lists to the member server's replication engine which assimilates all of the lists that are generated by the individual drivers. The member server's replication engine then sends the response (Action lists) to the master server (step **508**). The master server receives the response from the member server (step **510**) and evaluates it (step **512**) to determine the resource needs of a particular member server. In the illustrated example, individual master server drivers are handed lists that pertain to the resource with which they are associated. The drivers are then responsible for obtaining the content that is necessary to bring the corresponding member server resource into synchronization with the master server resource. This content or data is then sent to the member server (step **514**) for use in synchronizing its associated resource. In the described embodiment, content or data can either be sent separately, e.g. files sent through a file-sending protocol (such as HTTP or FTP) or the data can be embedded in the lists (Update lists) that are returned to the member server. The member server then receives the content or data that is sent from the master server (step **516**) and uses the data to synchronize its configuration of resources.

FIG. **6** shows steps in a method in accordance with an "automatic mode" in which the master server is monitored r any changes in resources. Step **600** monitors the resources that are resident on the master server. In the illustrated example, each of the master server drivers can be configured to monitor their associated resource. Step **602** determines whether there are any changes to the resource configuration. Here, if one of the drivers detects a change, it can notify the master server's replication engine, which then handles it as for the "full-synch" mode. In this example, each or any of the drivers can generate the Update list. The Update list is received by the member servers and used to update their resource configuration (step **606**).

The inventive methods and systems described above provide a simple, flexible approach to maintaining a configuration of resources synchronized across multiple computing devices. The methods and systems are flexible because many different types of resources, e.g. not just simply file resources, can be maintained in a synchronized state at any one time. In the illustrated example, economies are achieved by having each resource on a computing device associated with a different driver that is programmed to maintain its resource. The driver then ensures that its associated resource is synchronized with other resources that are present on other computing devices. Changes to resource configurations are passed ultimately to the associated driver which then ensures that the changes are promulgated to the resource for which the driver is responsible. Advantageously, the inventive methods and systems can be used in the context of web servers, e.g. web server clusters, to ensure that configurations and hence functionalities are standard across multiple different servers.

Although the invention has been described in language specific to structural features and/or methodological steps, it is to be understood that the invention defined in the appended claims is not necessarily limited to the specific features or steps described. Rather, the specific features and steps are disclosed as preferred forms of implementing the claimed invention.

What is claimed is:

1. A computer network comprising:

a master computing device comprising a configuration of resources, the master computing device being configured to develop a set of lists that describes aspects of its configuration of resources; and

a plurality of additional computing devices communicatively linked with the master computing device, each additional computing device comprising a configuration of resources that correspond, at least in part, to the configuration of resources of the master computing device, each additional computing device being configured to receive the lists that are developed by the master computing device and evaluate the lists to determine whether the particular configuration of resources corresponding to the respective computing device is synchronized with those of the master computing device,

each additional computing device, responsive to evaluating the lists, is configured to:

prepare a second set of lists that describes the resource configuration needs corresponding to the respective computing device in the event that the additional computing device is not synchronized with the master computing device; and

send the second set of lists to the master computing device.

2. The computer network of claim 1, wherein at least one of the computing devices comprises a web server.

3. The computer network of claim 1, wherein a plurality of the computing devices comprise web servers.

4. The computer network of claim 1, wherein all of the computing devices comprise web servers.

5. The computer network of claim 1, wherein the master computing device is further configured to:

receive the second set of lists from each of the additional computing devices;

evaluate the second set of lists to determine the resource configuration needs for, a corresponding additional computing device; and

send data to the corresponding additional computing device that can be used to synchronize the resource configurations for the corresponding additional computing device.

6. The computer network of claim 1, wherein all of the computing devices are configured to implement a common functionality.

7. The computer network of claim 1, wherein the lists comprise extensible markup language (XML) lists.

8. A computer network comprising:

a master server comprising a configuration of resources that define the content and settings for the master server, the master server being configured to develop a set of lists that describes aspects of its configuration of resources; and

a plurality of member servers communicatively linked with the master server, each member server having its own configuration of resources that correspond, at least in part, with those of the master server, each member server being configured to:

receive the set of lists that is developed by the master server;

evaluate the set of lists to determine whether its particular configuration of resources are synchronized with those of the master server; and

communicate to the master server any resource needs associated with an individual resource of its configuration of resources in the event the configuration of resources is found to be unsynchronized with the corresponding configuration of resources of the master server.

9. The computer network of claim 8, wherein all of the servers are web servers.

10. The computer network of claim 8, wherein each of the member servers comprises a plurality of drivers, each driver being associated with a different resource type of the member server's configuration of resources, each driver being configured to:

evaluate a set of lists that pertains to its associated resource to determine whether the resource is synchronized with a corresponding resource of the master server; and

prepare a set of lists that describes resource needs that will synchronize the associated resource in the event that the associated resource is not synchronized with the corresponding resource of the master server.

11. The computer network of claim 10, wherein each driver is further configured to:

receive data from the master server for updating its associated resource; and

use the data that is received from the master server to update its associated resource.

12. The computer network of claim 8, wherein said aspects of the resource configurations that are described in the lists that are developed by the master server comprise at least one signature that represents a particular resource of the configuration of resources.

13. The computer network of claim 8, wherein each member server is configured to communicate to the master server by building a set of lists that describes its resource needs and communicating the set of lists to the master server.

14. The computer network of claim 13, wherein the master server is configured to:

receive the set of lists that is built by each member server,

evaluate the set of lists that is received from each member server; and

send data to each of the member servers that enables the member servers to synchronize one or more resources that are not synchronized with those of the master server.

15. The computer network of claim 8, wherein the lists comprise extensible markup language (XML) lists.

16. A computing device comprising:

a master server comprising a configuration of resources that define the content and settings for the master server, the master server being configured to:

develop a set of lists that describes aspects of its configuration of resources;

send the set of lists to a plurality of member servers;

receive communications from the individual member servers responsive to sending the set of lists, the communications being capable of requesting data from the master server that enable the member servers to synchronize their configuration of resources with those of the master server; and

send data to a member server that can be used by the member server to synchronizers its configuration of resources.

17. The computing device of claim 16, wherein the master server comprises a web server.

18. The computing device of claim 16, wherein the master server and each of the member servers comprise a web server.

19. The computing device of claim 16, wherein the data that is sent to the member server is embedded in a list.

20. The computing device of claim 16, wherein the master server comprises a plurality of drivers, each driver being associated with a different resource type of the master server's configuration of resources, each driver being configured to prepare a portion of the list that pertains to its associated; resource.

21. The computing device of claim 16, wherein the lists comprise extensible markup language (XML) lists.

22. A computing device comprising:

one, or more server computers each of which comprising a configuration of resources tat define its content and settings, each server computer being configured to:

evaluate its own resources and request list of data that defines at least in part the configuration of resources that the server computer should have;

receive a set of update lists from a master server; and

update its configuration of resources using the lists that are received from the master server.

23. The computing device of claim 22, wherein the server computers comprise web servers.

24. The computing device of claim 22, wherein each server computer comprises a plurality of drivers, each driver being associated with a different resource type of the server computer's configuration of resources, each driver being configured to receive an update list that corresponds to its associated resource and update the resource configuration using the update list.

25. The computing device of claim 22, wherein the request lists and update lists comprise extensible markup language (XML) lists.

26. A computer-implemented method of synchronizing a configuration of resources on a plurality of computing devices comprising:

generating a set of lists that describes a configuration of resources that each of a plurality of computing devices should have in order to be synchronized with one another, the configuration of resources defining the content and the settings for each of the computing devices;

sending the set of lists to each of the computing devices;

receiving a response from one or more of the computing devices, each response requesting data that is needed in order to synchronize the configuration of resources for the corresponding computing device;

evaluating the response to determine what data is needed by a particular computing device to synchronize its resources; and

sending the data that is needed by the particular computing device to the computing device so that it can synchronize its resources.

27. The method of claim 26, wherein said computing devices comprise web servers.

28. The method of claim 27, wherein said generating of the set of lists comprises generating the set of lists using a master computing device composing a configuration of resources that are desired to be synchronized across said plurality of computing devices.

29. The method of claim 28, wherein the master computing device and the plurality of computing devices comprise web servers.

30. The method of claim 26, further comprising:

taking a signature of one or more resources of the configuration of resources; and

incorporating the signature into the set of lists.

31. The method of claim 26, wherein said sending of the data comprises embedding at least some of the data in the set of lists.

32. The method of claim 26, wherein the lists comprise extensible markup language (XML) lists.

33. One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, implement the method of claim 26.

34. One or more programmable web servers, each web server comprising;

one or more processors;

memory associated with the one or more processors; and

software code stored in the memory which, when executed by the one or more processors, implements the method of claim 26.

35. A computer-implemented method of synchronizing a configuration of resources on a computing device comprising:

receiving a set of lists that describes a configuration of resources that a first computing device should have in order to be synchronized with a configuration of resources of a second computing device, the configurations of resources defining the content and settings for the first and second computing devices;

evaluating the set of lists to determine whether the first computing device's configuration of resources is synchronized with the configuration of resources of the second computing device;

responsive to said evaluating and in the event that the first computing device's configuration of resources is not synchronized with the configuration of resources; of the second computing device, generating a response that contains information about resources that are needed for the first computing device in order to synchronize it with the configuration of resources of the second computing device;

sending the response to the second computing device;

responsive to said sending, receiving data from the second computing device that is to be used by the first computing device in order to synchronize it with the second computing device; and

synchronizing the first computing device using the data that was received from the second computing device.

36. The method of claim 35, wherein the first and second computing devices comprise web servers.

37. The method of claim 35, wherein the first and second computing devices comprise computing devices that are configured to implement a common functionality.

38. The method of claim 35, wherein the first and second computing devices comprise web servers that are configured to implement a common functionality.

39. The method of claim 35, wherein the first computing device comprises a plurality of drivers, each driver being associated with a different one of the resources of the configuration of resources, wherein:

said evaluating comprises, for at least one of the drivers, using said at least one driver to evaluate only a portion of the set of lists that pertains to the resource with which the driver is associated; and

said generating comprises generating at least a portion of the response using said at least one driver.

40. The method of claim 35, wherein said receiving of the data comprises receiving a set of lists, at least some of the data being embedded in the set of lists.

41. The method of claim 35, wherein the lists comprise extensible markup language (XML) lists.

42. One or more computer-readable media having computer-readable instructions thereon which, when executed by a computer, implement the method of claim 35.

43. A computer-implemented method of synchronizing resource configurations on a plurality of computing devices comprising:

generating a set of lists tat describes a configuration of resources that each of a plurality of computing devices should have in order to be synchronized with a master computing device, the configuration of resources defining the content and the settings for each of the computing devices;

sending the set of lists to each of the computing devices;

evaluating the set of lists at each of the computing devices to determine whether any resources of the configuration of resources of the individual computing devices are synchronized with the resource configurations of the master computing device;

if any of the individual computing devices are not synchronized with the master computing device:

generating a response for each computing device that describes data that is needed for a particular computing device in order for it to synchronize its configuration of resources with the configuration of resources of the master computing device;

sending the response to the master computing device;

evaluating the response at the master computing device to determine what configuration of resources is needed by the particular computing device that sent the response;

sending data that is needed by the particular computing device to the particular computing device so that it can synchronize itself; and

using the data that is sent, synchronizing the particular computing device.

44. The method of claim 43, wherein all of the computing devices are web servers.

45. The method of claim 43, wherein the lists comprise extensible markup language (XML) lists.

46. The method of claim 45, wherein said generating of the response comprises generating an extensible markup language (XML) response.

47. One or more computer-readable media having computer-executable instructions thereon which, when executed by one or more computers, implements the method of claim 43.

48. A server software architecture embodied on one or more computer-readable media for implementation on a computer server system, the server software architecture comprising:

a replication engine to handle communication between a master server and a plurality of member servers; and

at least one driver capable of communicating with the replication engine, the driver being associated with a particular resource that is resident on the master server, the driver being configured to:

prepare a list that describes characteristics of its associated resource; and

articulate the list to the replication engine;

the replication engine being configured to receive the list from the one driver, send the list to one or more

of the member servers so that the member servers can use the list to synchronize a resource that corresponds to the resource with which the one driver is associated, and receive data from one or more of the member services describing resource needs of the particular member server in the event that a resource is determined not to be synchronized with the corresponding resource on the master server.

49. The server software architecture of claim **48**, wherein the master server and the members servers comprise web servers.

50. The server software architecture of claim **48**, wherein the master server and the members servers comprise web servers that are individually configured to implement a common functionality.

51. The server software architecture of claim **48**, wherein the driver is configured to make at least one signature pertaining to a resource with which it is associated.

52. The server software architecture of claim **48** wherein said at least one driver comprises a plurality of drivers each of which being associated with a different resource that is resident on the master server.

53. The server software architecture of claim **48**, wherein the list comprises an extensible markup language (XML) list.

54. A server software architecture embodied on one or more computer-readable media for implementation on a computer server system, the server software architecture comprising:

a first replication engine associated with a master server, the first replication engine handling communication between the master server and a plurality of member servers;

a plurality of master server drivers capable of communicating with the first replication engine, each master server driver being associated with a different; resource that is resident on the master server and being configured to:

prepare a list that describes characteristics of its associated resource; and

articulate the list to the first replication engine; the first replication engine being configured to receive a list from each of the master server drivers and send one or more lists to one or more of the member servers so that the member servers can use the one or more lists to synchronize one or more resources that correspond to resources that are resident on the master server;

a plurality of second replication engines each of which being associated with different ones of the plurality of member savers, the second replication engines handling communication between their associated member server and the master server and being configured to receive one or more lists that might be sent by the first replication engine; and

a collection of member server drivers associated with each of the member servers, each of the member server drivers of a collection being associated with a different resource that is resident on the associated member server, each member server driver being configured to:

evaluate the resource with which it is associated, in response to its second replication engine receiving a list from the first replication engine;

determine whether the resource is synchronized with a corresponding resource on the master server; and

prepare a response to the master server that describes resource needs of the member server in the event that a resource is determined not to be synchronized with the corresponding resource on the master server.

55. The server software architecture of claim **54**, wherein the master server and the member servers are web servers.

56. The server software architecture of claim **54**, wherein the list comprises an extensible markup language (XML) list.

* * * * *

US006727917B1

(12) **United States Patent**
Chew et al.

(10) **Patent No.: US 6,727,917 B1**
(45) **Date of Patent: Apr. 27, 2004**

(54) **USER INTERFACE FOR PALM-SIZED COMPUTING DEVICES AND METHOD AND APPARATUS FOR DISPLAYING THE SAME**

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(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/564,928**

(22) Filed: **May 4, 2000**

Related U.S. Application Data

(60) Provisional application No. 60/175,112, filed on Jan. 6, 2000.

(51) **Int. Cl.**[7] **G06F 3/14**
(52) **U.S. Cl.** **345/765**; 345/179
(58) **Field of Search** 345/701, 776, 345/808, 157, 158, 169, 173, 764, 765, 835, 179

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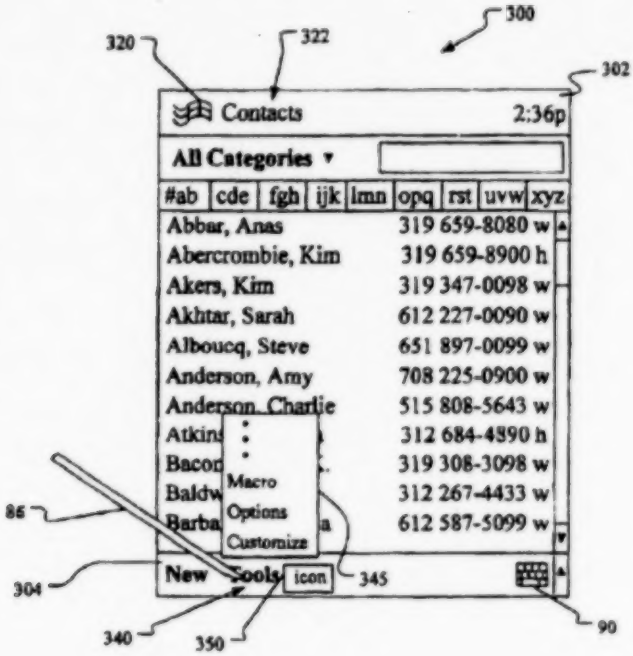
Primary Examiner—Cao (Kevin) Nguyen
(74) *Attorney, Agent, or Firm*—Westman, Champlin & Kelly, P.A.

(57) **ABSTRACT**

The hand-held computing device user interface (UI) of the present invention displays information for an active application program in a middle portion of the screen, and displays a shell program controlled navigation bar at a top portion of the screen. The navigation bar includes a navigation icon which when tapped by the stylus aids the user in navigating to other application programs. The navigation bar also includes a title for the active application program, thus saving vertical real estate on the screen. The UI of the present invention also displays an application menu bar at a bottom portion of the screen so that the user of the hand-held device can manipulate data from the active application by tapping menu items with a stylus without blocking view of the middle portion of the display.

20 Claims, 8 Drawing Sheets



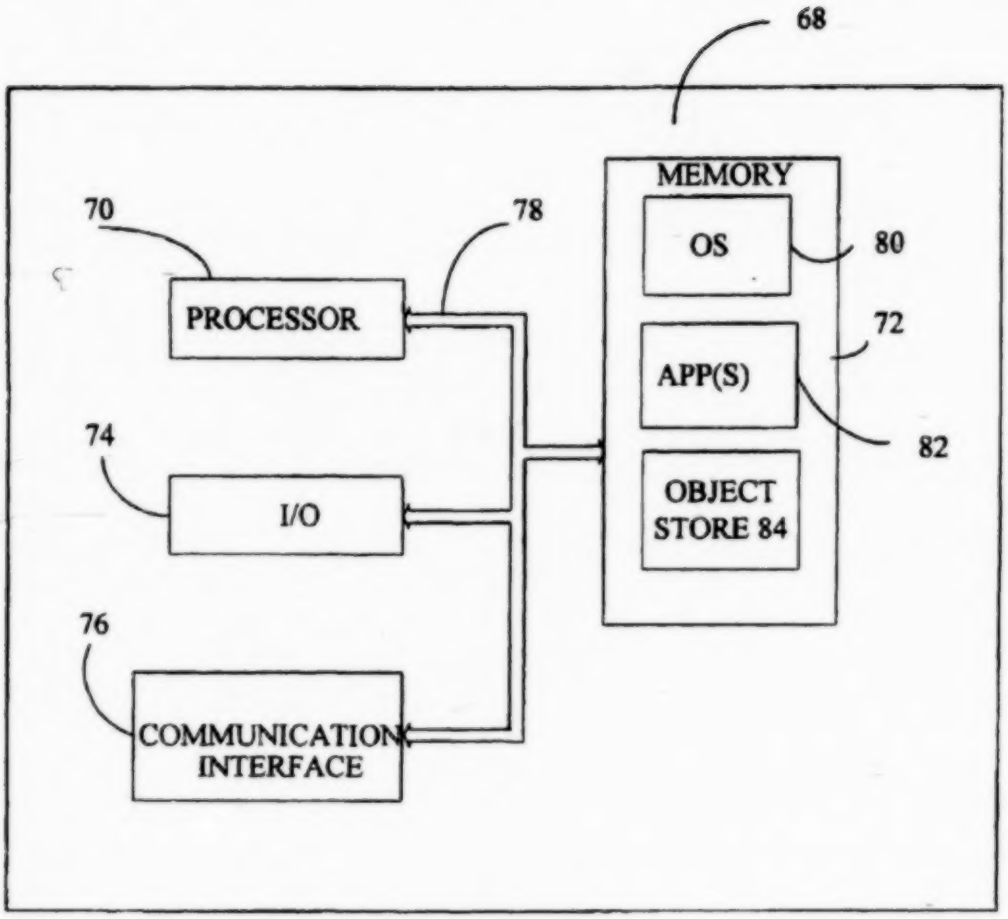

68
MEMORY
70
78
OS
80
PROCESSOR
72
APP(S)
82
74
I/O
OBJECT STORE 84
76
COMMUNICATION INTERFACE

FIG. 1

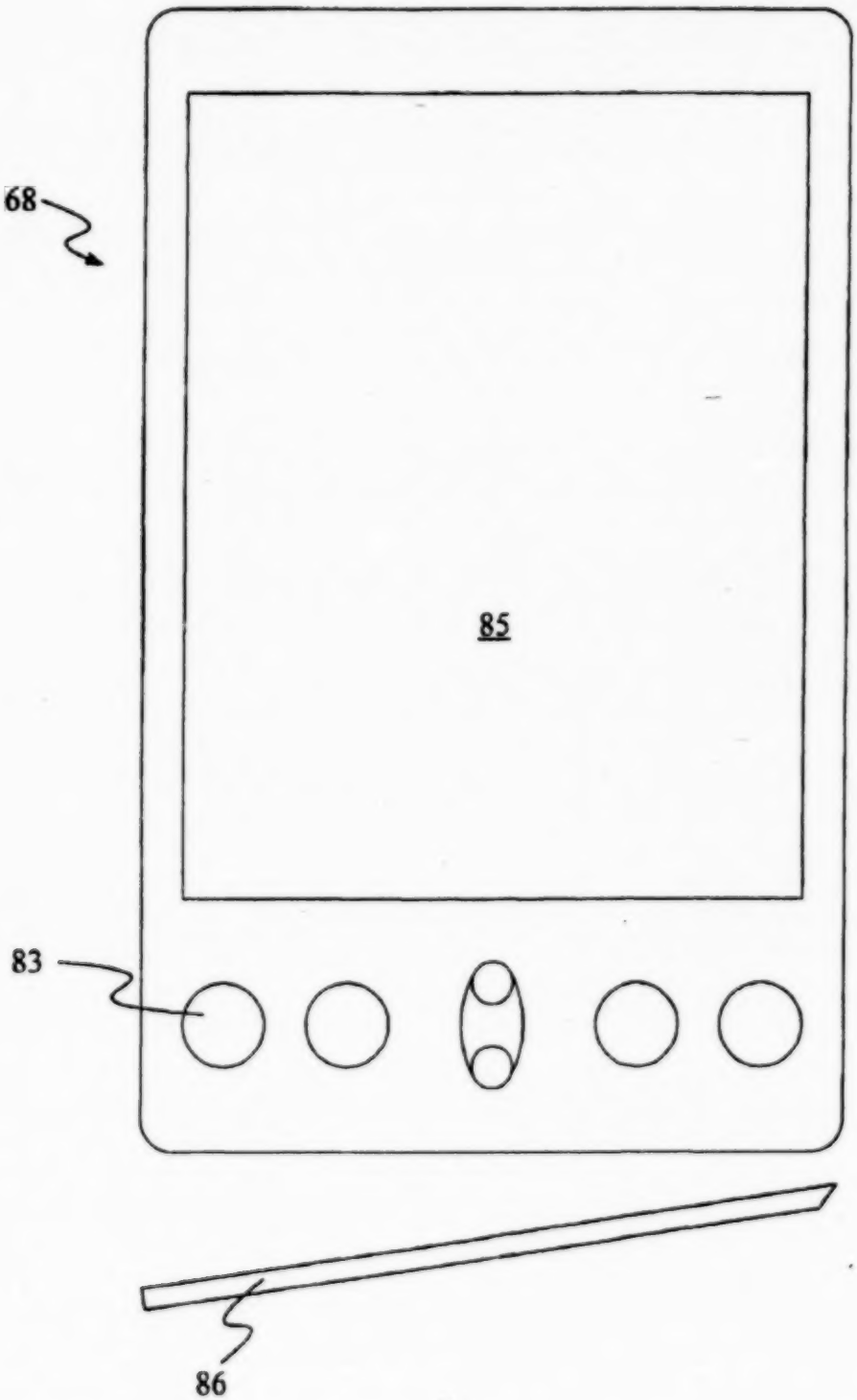


FIG. 2

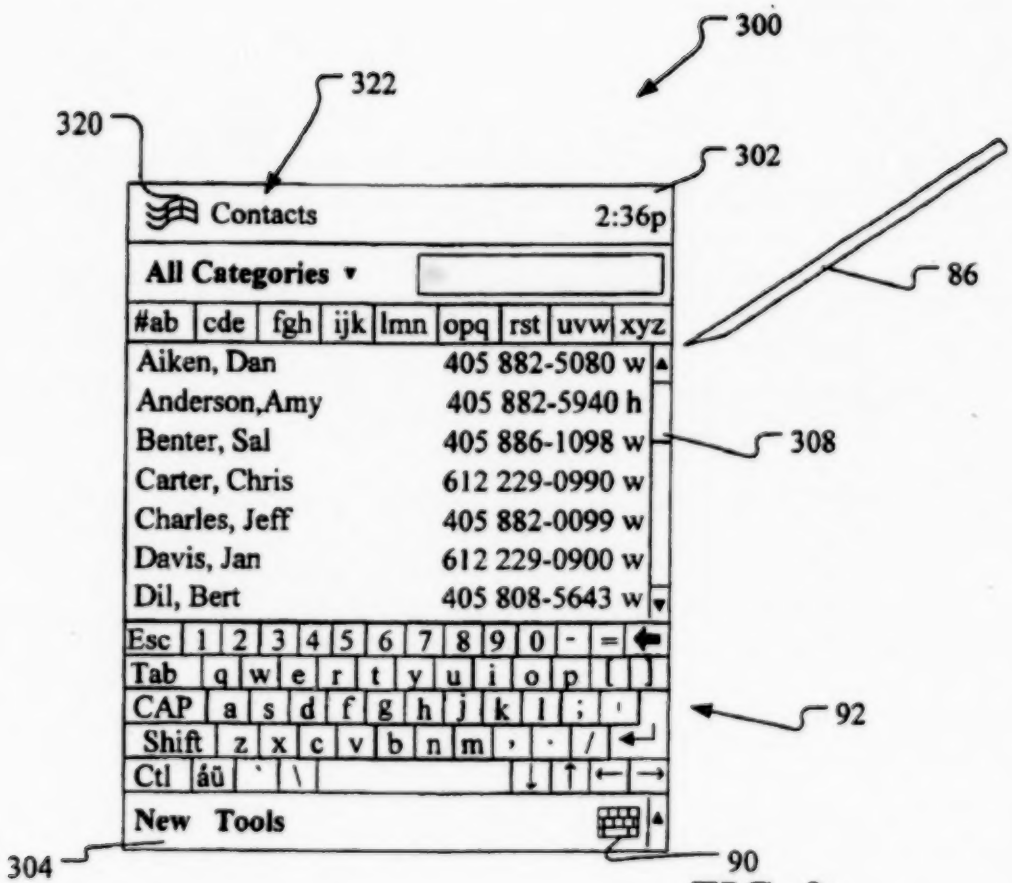

300
322
320
302
Contacts
2:36p
All Categories
86
#ab cde fgh ijk lmn opq rst uvw xyz
Aiken, Dan 405 882-5080 w
Anderson,Amy 405 882-5940 h
Benter, Sal 405 886-1098 w
Carter, Chris 612 229-0990 w
Charles, Jeff 405 882-0099 w
Davis, Jan 612 229-0900 w
Dil, Bert 405 808-5643 w
308
Esc 1 2 3 4 5 6 7 8 9 0 - = ⬅
Tab q w e r t y u i o p [ ]
CAP a s d f g h j k l ; '
Shift z x c v b n m , . / ↵
Ctl áü ` \ ↓ ↑ ← →
92
New Tools
304
90

FIG. 3

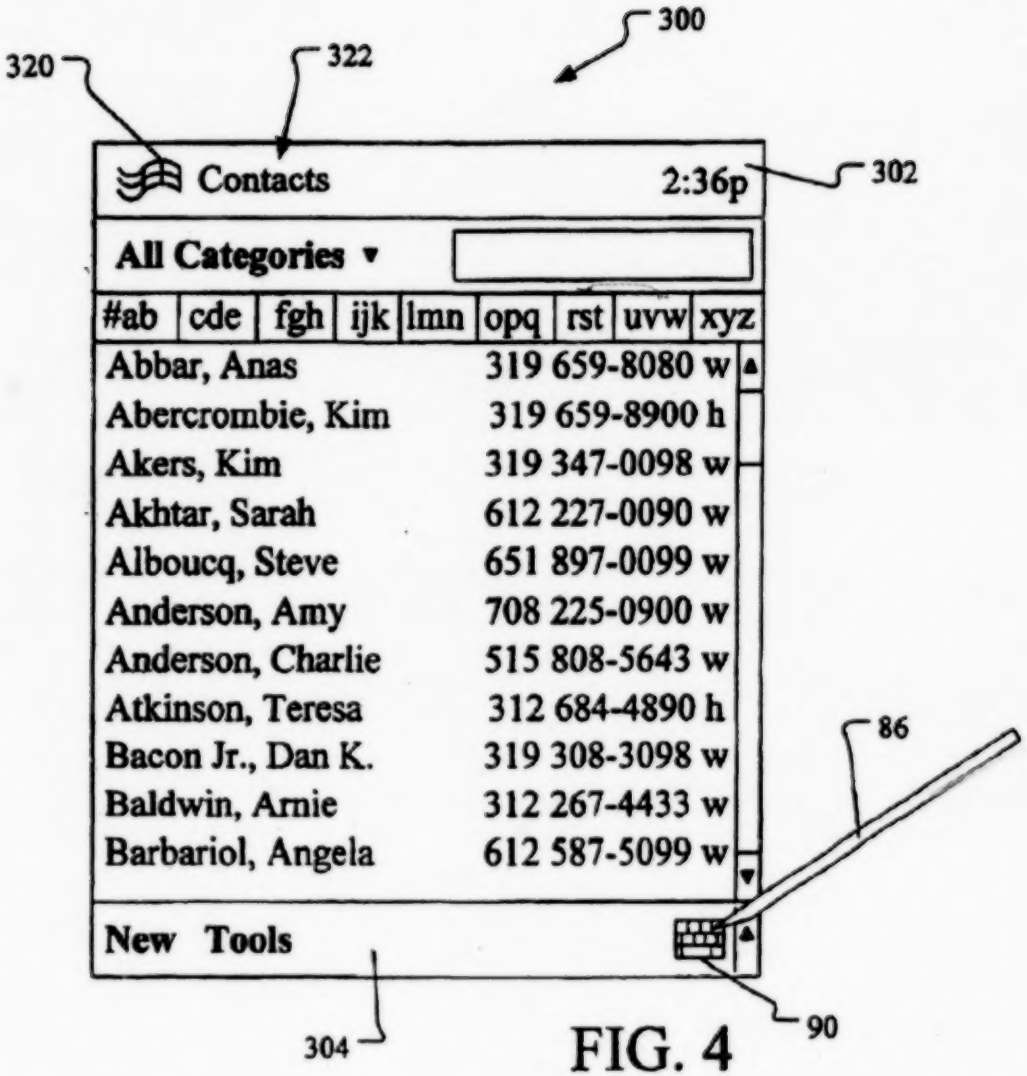

300
320
322
Contacts
2:36p
302
All Categories
#ab cde fgh ijk lmn opq rst uvw xyz
Abbar, Anas 319 659-8080 w
Abercrombie, Kim 319 659-8900 h
Akers, Kim 319 347-0098 w
Akhtar, Sarah 612 227-0090 w
Albouq, Steve 651 897-0099 w
Anderson, Amy 708 225-0900 w
Anderson, Charlie 515 808-5643 w
Atkinson, Teresa 312 684-4890 h
Bacon Jr., Dan K. 319 308-3098 w
Baldwin, Arnie 312 267-4433 w
Barbariol, Angela 612 587-5099 w
86
New Tools
304
90

FIG. 4

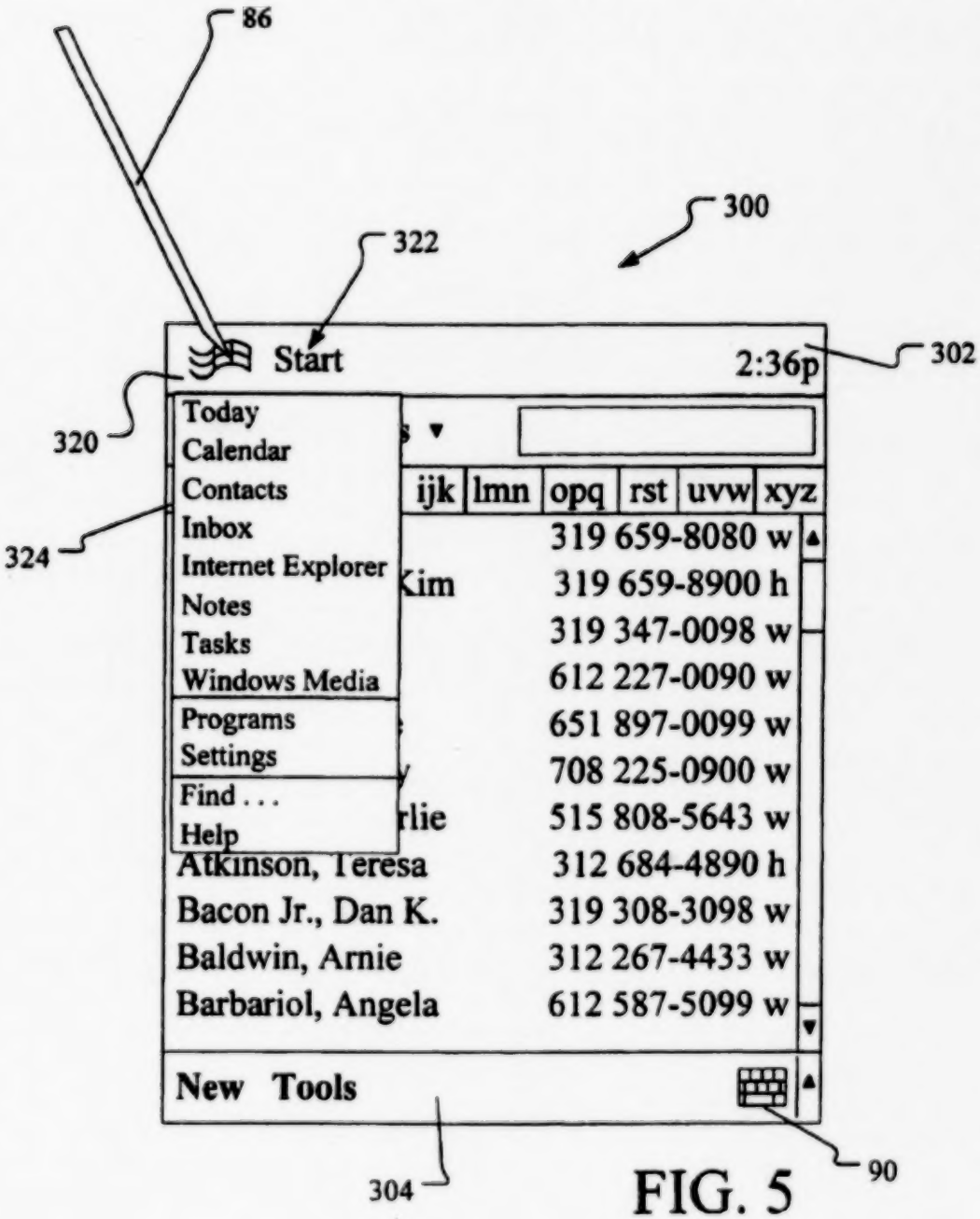

86
300
322
Start
2:36p
302
320
Today
Calendar
Contacts
Inbox
Internet Explorer
Notes
Tasks
Windows Media
Programs
Settings
Find . . .
Help
324
ijk lmn opq rst uvw xyz
319 659-8080 w
319 659-8900 h
319 347-0098 w
612 227-0090 w
651 897-0099 w
708 225-0900 w
515 808-5643 w
312 684-4890 h
319 308-3098 w
312 267-4433 w
612 587-5099 w
Atkinson, Teresa
Bacon Jr., Dan K.
Baldwin, Arnie
Barbariol, Angela
New Tools
304
90

FIG. 5

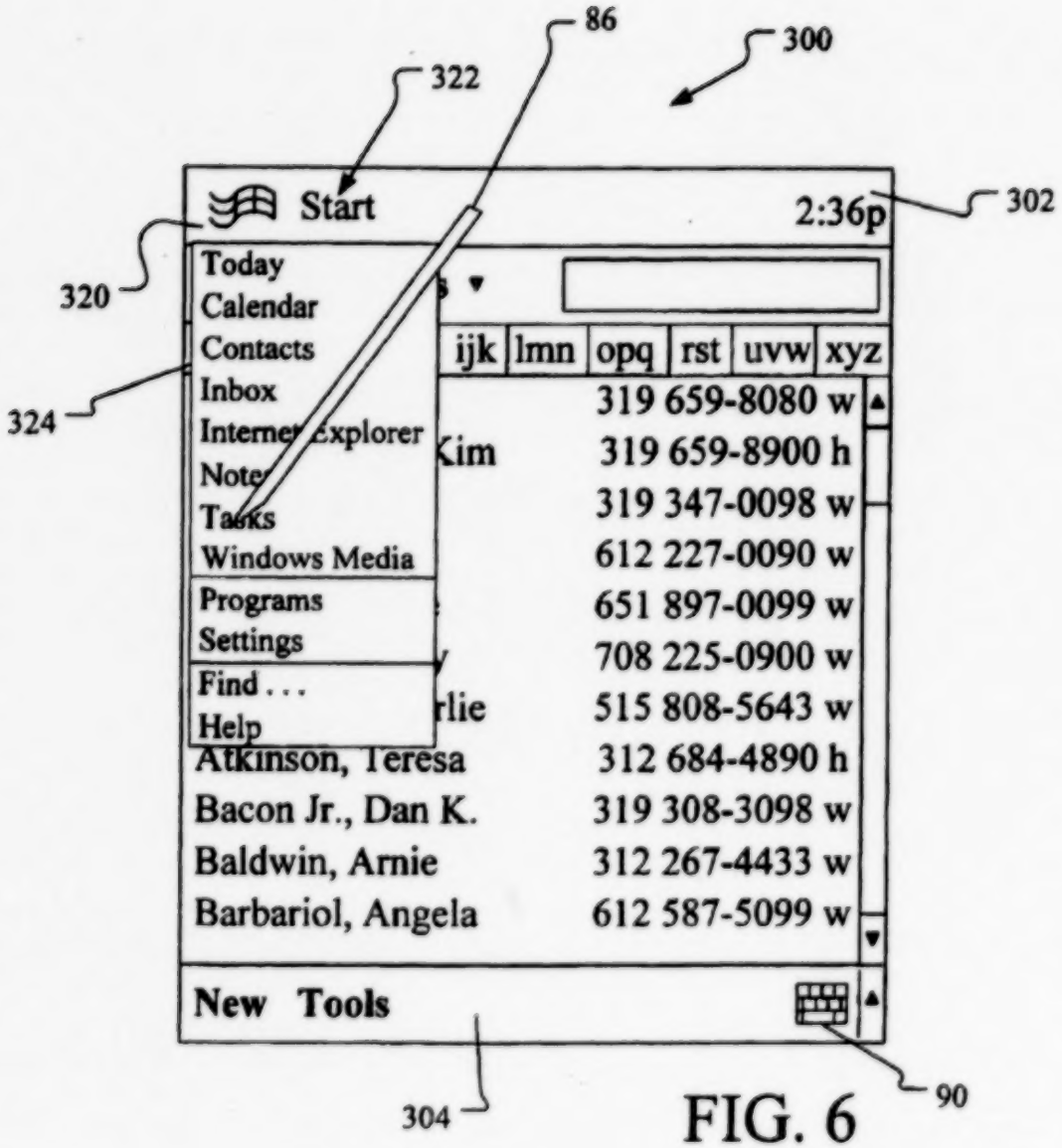

86
300
322
Start
2:36p
302
320
Today
Calendar
Contacts
Inbox
Internet Explorer
Notes
Tasks
Windows Media
Programs
Settings
Find . . .
Help
324
ijk lmn opq rst uvw xyz
319 659-8080 w
319 659-8900 h
319 347-0098 w
612 227-0090 w
651 897-0099 w
708 225-0900 w
515 808-5643 w
312 684-4890 h
319 308-3098 w
312 267-4433 w
612 587-5099 w
Atkinson, Teresa
Bacon Jr., Dan K.
Baldwin, Arnie
Barbariol, Angela
New Tools
304
90

FIG. 6

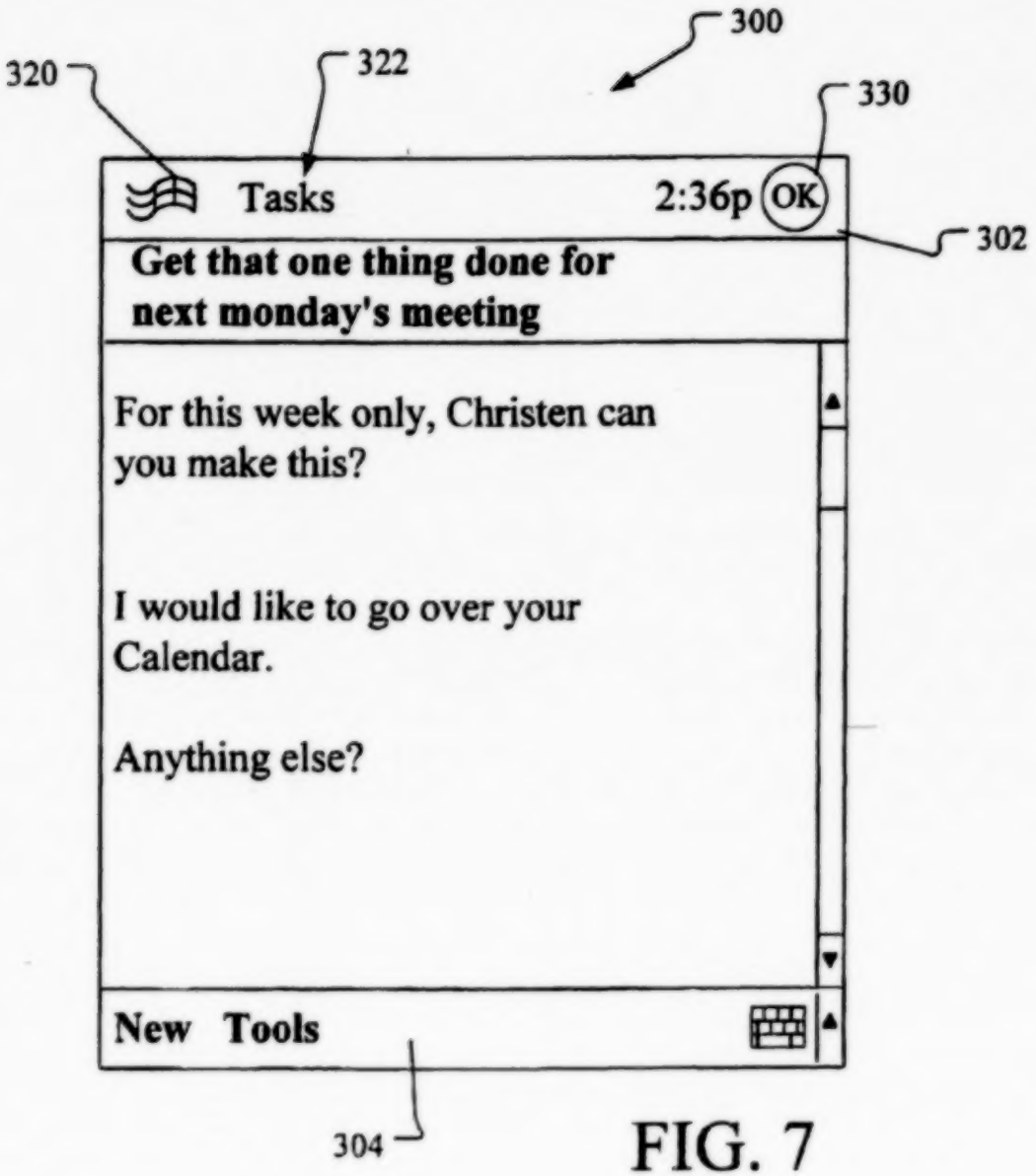

300
320
322
330
Tasks
2:36p
OK
302
Get that one thing done for next monday's meeting
For this week only, Christen can you make this?
I would like to go over your Calendar.
Anything else?
New Tools
304

FIG. 7

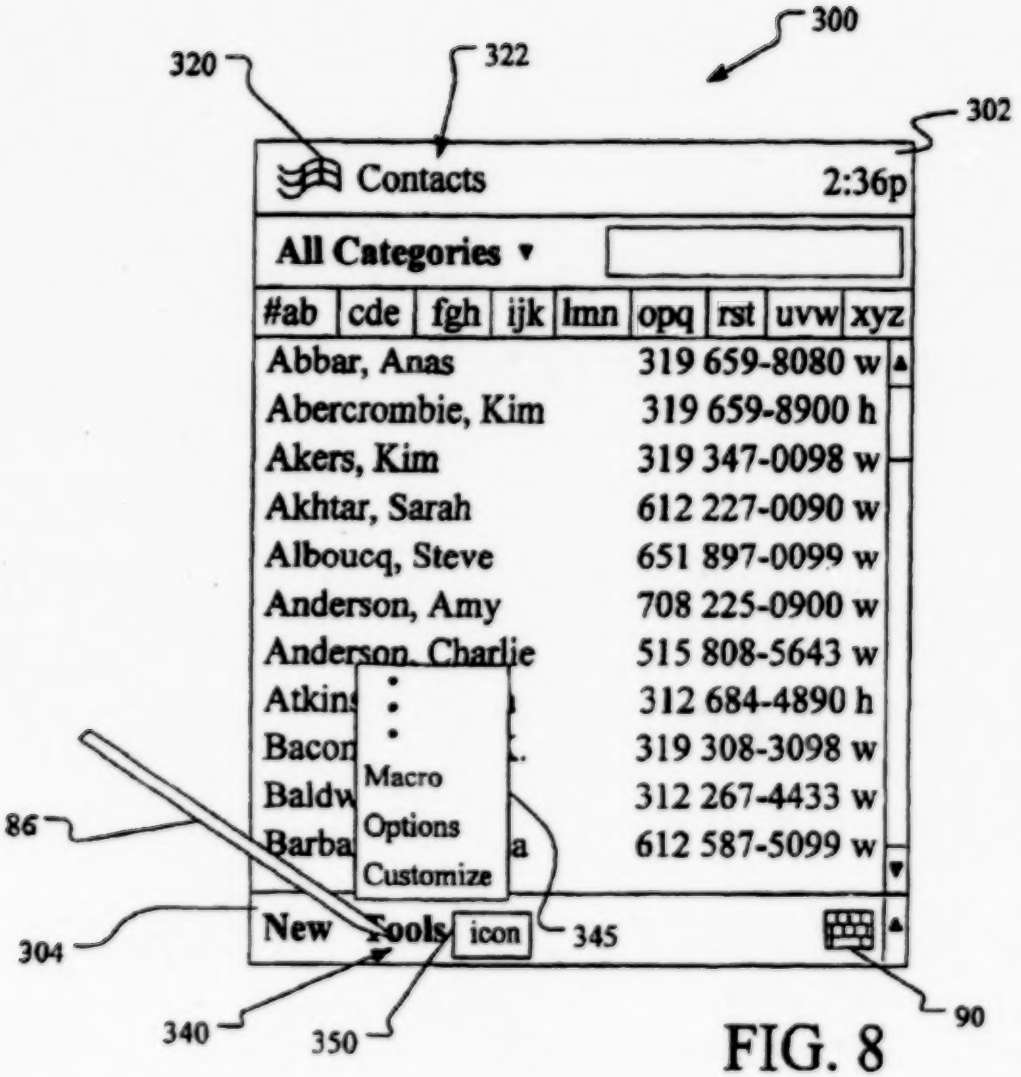

300
320
322
302
Contacts
2:36p
All Categories
#ab
cde
fgh
ijk
lmn
opq
rst
uvw
xyz
Abbar, Anas 319 659-8080 w
Abercrombie, Kim 319 659-8900 h
Akers, Kim 319 347-0098 w
Akhtar, Sarah 612 227-0090 w
Alboucq, Steve 651 897-0099 w
Anderson, Amy 708 225-0900 w
Anderson, Charlie 515 808-5643 w
312 684-4890 h
319 308-3098 w
312 267-4433 w
612 587-5099 w
Macro
Options
Customize
86
304
New
Tools
icon
345
340
350
90

FIG. 8

USER INTERFACE FOR PALM-SIZED COMPUTING DEVICES AND METHOD AND APPARATUS FOR DISPLAYING THE SAME

REFERENCE TO RELATED APPLICATION

The present application claims priority from U.S. Provisional Application Ser. No. 60/175,112, filed on Jan. 6, 2000 and entitled "USER INTERFACE FOR PALM-SIZED COMPUTING DEVICES AND METHOD AND APPARATUS FOR DISPLAYING THE SAME."

REFERENCE TO CO-PENDING APPLICATIONS

Reference is hereby made to co-pending U.S. patent applications, entitled "METHOD AND APPARATUS FOR FAST SEARCHING OF HAND-HELD CONTACTS LISTS", attorney docket number M61.12-0225; entitled "SMART COLUMN FOR CONTACT INFORMATION ON PALM-SIZED COMPUTING DEVICES AND METHOD AND APPARATUS FOR DISPLAYING THE SAME", attorney docket number M61.12-0226; entitled "USER INTERFACE FOR PALM-SIZED COMPUTING DEVICES AND METHOD AND APPARATUS FOR DISPLAYING THE SAME", attorney docket number M61.12-0227; entitled "METHOD AND APPARATUS FOR PROVIDING CONTEXT MENUS ON A PEN-BASED DEVICE", attorney docket number M61.12-0228; entitled "METHOD AND APPARATUS FOR PROVIDING RECENT CATEGORIES ON A HAND-HELD DEVICE", attorney docket number M61.12-0229.

BACKGROUND OF THE INVENTION

The present invention relates to hand-held personal computing devices commonly known as hand-held devices or palm-size devices. More particularly, the present invention relates to an improved user interface (UI) for a palm-held portable computer.

Hand-held devices are small electronic computing devices, sometimes also referred to as personal digital assistants (PDAs). Generally, these devices fit comfortably in the palm of a user's hand. Hand-held devices have gained a niche as personal organizers, allowing users to view or change lists of contacts, tasks or calendar events on a display using an interface device such as a keyboard (typically integrated into a touch sensitive display) and a stylus.

In a hand-held device running more than one application, there is a need for improved UI mechanisms for manipulating data, for providing feedback, for controlling the applications, and for navigating between the different applications. All these peripheral UI mechanisms are needed around the actual data content of the applications. However, there is very limited screen or display real estate available for displaying both the data and the UI for the applications and/or shell program. As screen real estate is utilized for UI application functions, the amount of data which can be displayed to the user decreases accordingly. Thus, there is a need for methods of efficiently displaying application and shell program information on a limited size screen.

SUMMARY OF THE INVENTION

The present invention includes apparatus and methods for generating a user interface (UI), for a stylus based hand-held device, which maximizes screen real estate available for displaying data, and which provides a mechanism to efficiently manipulate data and to switch between application programs.

The hand-held computing device UI of the present invention displays information for an active application program in a middle portion of the screen, and displays a shell program controlled navigation bar at a top portion of the screen. The navigation bar includes a navigation icon which when tapped by the stylus aids the user in navigating to other application programs. The navigation bar also includes a title for the active application program, thus saving vertical real estate on the screen. The UI of the present invention also displays an application menu bar at a bottom portion of the screen so that the user of the hand-held device can manipulate data from the active application by tapping menu items with a stylus without blocking the view of the middle portion of the display.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of a hand-held device computing environment in which embodiments of the present invention may be practiced.

FIG. **2** is a front view of a hand-held computing device on which embodiments of the present invention may be practiced.

FIG. **3** is a screen-shot of a display showing a portion of a hand-held device user interface (UI) in accordance with embodiments of the invention and showing a soft input panel.

FIG. **4** is a screen-shot of a display showing a portion of the hand-held device UI shown in FIG. **3**, showing the soft input panel removed from view.

FIG. **5** is a screen-shot of a display showing the portion of the UI of FIG. **4**, but with a shell program navigation or start menu deployed.

FIGS. **6–7** are screen-shots of the display shown in FIG. **5**, which illustrate UI mechanisms for changing application information displayed by the shell program.

FIG. **8** is a screen-shot of a display showing a portion of the UI of the invention with an application tool menu deployed.

DETAILED DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

FIG. **1** is a block diagram of a hand-held device **68**, which is an exemplary computing environment for the present invention. Hand-held device **68** includes a microprocessor **70**, memory **72**, input/output (I/O) components **74**, a communication interface **76** for communicating with, for example, a separate computer or hand-held device. In one embodiment, the aforementioned components are coupled for communication with one another over a suitable bus **78**.

Memory **72** is implemented as non-volatile electronic memory such as random access memory (RAM) with a battery back-up module (not shown) such that information stored in memory **72** is not lost when the general power to mobile device **68** is shut down. A portion of memory **72** is preferably allocated as addressable memory for program execution, while another portion of memory **72** is preferably used for storage, such as to simulate storage on a disk drive.

Memory **72** includes an operating system **80**, application programs **82** as well as an object store **84**. During operation, operating system **80** is preferably executed by processor **70** from memory **72**. Operating system **80**, in one preferred embodiment, is a "WINDOWS CE" brand operating system commercially available from Microsoft Corporation, also known as Windows for Pocket PC. Operating system **80** is preferably designed for hand-held devices, and implements

database features that can be utilized by applications **82** through a set of exposed application programming interfaces and methods. The objects in object store **84** are maintained by applications **82** and operating system **80**, at least partially in response to calls to the exposed application programming interfaces and methods.

Input/output components **74** can include, for example, input devices such as a keyboard, a mouse or other pointing device, touch sensitive display components, and control buttons. Input/output components **74** can also include output devices such as liquid crystal displays and speakers. Further, input/output components **74** include electronics and/or software associated with these devices or with other devices such as printers.

Communication interface **76** represents numerous devices and technologies that allow hand-held device **68** to send and receive information. The devices include wired and wireless modems, satellite receivers and broadcast tuners to name a few. In some embodiments, mobile device **68** can also be directly connected to a computer to exchange data therewith. In such cases, communication interface **76** can be an infrared transceiver or a serial, parallel, USB, Ethernet or other type of communication connection, all of which are capable of transmitting streaming information. While communication interface **76** is included in various forms in many embodiments of the invention, communication interface **76** is optional in yet other embodiments if sending and receiving information is not required.

FIG. **2** is a simplified pictorial illustration of device **68**. Device **68** can be a desktop assistant sold under the designation H/PC; a palm-size PC or Pocket PC designated as P/PC having software provided by the Microsoft Corporation. In one embodiment, device **68** includes a set of control buttons **83**, display **85** and stylus **86**. In the embodiment shown in FIG. **2**, display **85** is a liquid crystal display (LCD) which uses a contact sensitive display screen in conjunction with stylus **86**. Stylus **86** is used to press or contact display **85** at designated coordinates to accomplish certain user input functions. In some embodiments, a miniaturized keyboard with alpha-numeric keys is provided with the mobile device. In other embodiments, a "soft" keyboard **92** accessible through a soft input panel (SIP) button/icon **90** provided through a contact sensitive display screen (shown in FIGS. **3–10**) on the device. In yet other embodiments, a character recognition module is employed to recognize characters written on the contact sensitive display screen using stylus **86**.

In some hand-held device UIs, a number of difficulties can be experienced. For example, in some instances the UI provides no title bar indicating the name of the current application program being displayed to the user. Generally, for optimal use, the user needs to be aware of which application is active and must allow time for his or her mind to discern that they are in the particular application (e.g., a Contacts application). However, if a conventional application program title bar were simply added to the UI, vertical screen real estate would be consumed, which is already in short supply in a small hand-held device.

Another characteristic of conventional hand-held device UIs is that the application commands (the commands that manipulate the data on the screen) are located at the top of the screen. As a result, for the user to select a data manipulating command or device, his or her hand frequency has to obscure the data in order to get to the commands with the stylus. Meanwhile, the shell navigation program icon, which is used to switch between application programs, is displayed at the bottom of the screen. Therefore, when the user wishes to navigate away from the current data set (i.e., wishes to utilize a different data set and application program), his or her hand does not obscure the screen.

A hand-held device UI of the present invention addresses these problems. FIGS. **3–8** illustrate features of a hand-held device UI **300** that is shown on display **85** of FIG. **2** under various embodiments of the present invention. In FIGS. **3–6** and **8**, UI **300** is shown in use with a Contacts application program. However, UI **300** is not limited to use with Contacts applications, and can be used with a wide variety of applications adapted for hand-held devices.

As shown in FIG. **3** with a Contacts window active, UI **300** includes a shell program navigation bar **302** and an application program menu bar **304**. UI **300** also includes scroll bar **308** for moving within the active application program, as well as a soft input panel (SIP) **92** and an SIP button/icon **90**. By tapping stylus **86** on the letters on SIP **92**, the user is able to input data into the application programs.

Referring to FIG. **4**, it can be seen that by tapping SIP icon **90** with stylus **86**, SIP **92** can be removed from view in the window of UI **300** to allow for additional screen real estate on which the shell and application programs may be displayed. FIGS. **4–8** illustrate UI **300** with SIP **92** removed from view.

Referring back to FIG. **3**, UI **300** is provided with several significant differences from prior art hand-held device UIs. As in the prior art, shell program navigation bar **302** can include navigation or start menu icon **320** for use in implementing shell program functions and for navigating between application programs (i.e., Contacts programs, Tasks programs, Calendar programs and the like). The start menu icon shown is a trademark of Microsoft Corporation, and other start or navigation menu icons can be used in the present invention. In contrast to prior art hand-held device UIs, in UI **300** navigation bar **302** is positioned at the top of the screen instead of at the bottom of the screen. Also in contrast to the prior art, this navigation bar serves a dual purpose.

First, navigation bar **302** serves as a shell program navigation tool in the same or similar manner as navigation or start menus in the prior art. The second purpose provided by shell program navigation bar **302** is that it also acts as a title bar for the active application program. Thus, it displays the title or name **322** of the current active application, which in FIG. **3** is a Contacts application. Application title **322** displayed by shell program navigation bar **302** closely resembles prior art application title bars so that the user quickly comprehends that this is the title of the application. The start flag icon **320** with title **322** positioned beside it provides familiarity with the start icon from some desktop UIs. As will be discussed later with reference to FIGS. **5–7**, when a start menu is deployed, the title displayed by shell program navigation bar **302** changes from the title of the active application to "Start" in order to reinforce to the user the correlation between the navigation bar and its corresponding functions.

Another significant feature of UI **300** is that the application menu bar **304** is displayed at the bottom of the screen. It has been found that the user's eyes first gravitate to the top of the screen, so it is beneficial to put the "anchoring" data there. Stagnant information such as application commands (available through the menu bar **304**) can be placed in a less vital but still extremely accessible screen location (the bottom). In this manner, when the user wishes to issue a command upon the data in the middle of the screen, he or she

goes to the menu commands at the bottom and his or her hand does not obscure the data. Only when the user is ready to navigate to another application does the user's hand obscure the screen.

FIGS. 5–7 illustrate features of navigation bar **302** provided by UI **300** of the present invention. When the user wishes to implement a shell program function or to switch between application programs, stylus **86** is used to tap navigation icon **320** to deploy navigation menu **324** as is known in the art. However, upon deployment of navigation menu **324**, the shell program changes title **322** from the name of the active application program (see FIG. **4**) to "Start" or to a title which clearly indicates to the user that a shell navigation menu is displayed. This is shown for example in FIG. **5**. Then, if a different application program is activated, the shell program again changes title **322** displayed in navigation bar **302**. For example, in one embodiment, if the "Tasks" item in menu **324** is selected using the stylus as shown in FIG. **6**, upon activation of the Tasks program the title **322** in navigation bar **302** is changed accordingly as shown in FIG. **7**.

Another feature of UI **300** shown in FIG. **7** is the dynamically controlled inclusion of the confirmation ("OK") button **330** at the top right hand corner in navigation bar **302**. Taking advantage of the corners of the screen as places that stand out to the user, in response to a query from the application or shell programs, selecting confirmation button **330** with the stylus dismisses the current screen contents and returns the user to the "owner" (e.g., tapping the confirmation button **330** in an open contact card entry will return the displayed information to the main list). In some embodiments, while confirmation button **330** is displayed in the upper right hand corner of the screen, the clock shifts to the left. Once the confirmation button is no longer displayed, the clock is once again right justified.

FIG. **8** illustrates yet other aspects of UI **300** in accordance with the present invention. As shown in FIG. **8**, menu bar **304** includes menu deploying names or buttons **340** as is known in the art. Tapping one of the menu deploying buttons **340** in menu bar **304** results in deployment of the appropriate menu **345** as is also known in the art. Generally, the user can select desired tools or functions within deployed tool bar menus **345**.

In addition to menu bar **304** being positioned at the bottom of the screen, menu bar **304** in UI **300** can include tool bar icons **350**. Tapping tool icons **350** results in the implementation or activation of functions (i.e, cut, copy, paste, etc.) as is known in the art. Inclusion of both menu deploying buttons **340** and tool implementing icons **350** on a single menu bar **304** saves vertical real estate on the screen, which is highly beneficial in hand-held devices.

To summarize some of the above discussed aspects of the present invention, the present invention includes a UI, for a stylus based hand-held device, which is optimized for navigation and application control while better utilizing screen space. According to a first aspect of the invention, an application specific title is displayed on the shell program's navigation bar. In the prior art, the application specific title has been displayed by the application in a row separate from the shell program's navigation bar, wasting vertical screen real estate. Further, the navigation bar is placed at the top of the screen since when changing between programs, it is unimportant whether the user's hand blocks the displayed data.

According to a second aspect of the present invention, the UI displays toolbar icons **350** in the same row (i.e., menu bar) as menu buttons **340**, thus saving real estate on the display. In some embodiments, this row, which includes the application specific menu buttons and the toolbar icons, is placed at the bottom of the screen so that the user's hand does not block the displayed data when selecting a menu button for deploying a menu or a tool icon for implementing a tool or function which manipulates the data.

According to a third aspect of the present invention, the shell-controlled soft input panel (SIP) button **90** is displayed on the application controlled menu bar **304** at the bottom of the display instead of on the shell program's navigation bar **302** as is conventionally the case.

Although the present invention has been described with reference to particular embodiments, workers skilled in the art will recognize that changes may be made in form and detail without departing from the spirit and scope of the invention.

What is claimed is:

1. A method of generating a user interface for a stylus-based hand-held computing device having a display screen and a stylus for providing user input through the screen, the hand-held device running a shell program and at least one application program, the method comprising:

displaying information for an active application program in a middle portion of the screen; and

displaying a shell program controlled navigation bar at a top portion of the screen, wherein displaying the shell program controlled navigation bar includes displaying a navigation icon which when tapped by the stylus aids the user in navigating to other application programs, and wherein displaying the shell program controlled navigation bar further includes displaying on the navigation bar a title for the active program.

2. The method of claim **1**, and further comprising:

receiving a first input from the user in the form of a tap on the navigation icon;

displaying a navigation menu in response to the first input, and

displaying on the shell program controlled navigation bar a shell program indicative title in place of the title for the active application program while the navigation menu is displayed.

3. The method of claim **2**, wherein displaying the shell program indicative title further includes displaying Start on the shell program controlled navigation bar in place of the title for the active application program while the navigation menu is displayed.

4. The method of claim **2**, and further comprising:

receiving a second input from the user selecting an alternate application program as the active program; and

displaying on the shell program controlled navigation bar a title for the alternate application program selected as the active program.

5. The method of claim **4**, wherein displaying the title for the alternate application program selected as the active program further includes displaying the title for the alternate program on the navigation bar when the navigation menu is no longer displayed.

6. The method of claim **1**, and further comprising displaying a confirmation icon in a corner of the navigation bar, wherein the user provides a response to a query from the active application program by tapping the confirmation icon.

7. The method of claim **1**, and further comprising displaying an application menu bar for the active application program at a bottom portion of the screen.

8. The method of claim 7, wherein displaying the application menu bar for the active application program at the bottom portion of the screen further comprises:

displaying menu deploying buttons on the application menu bar, wherein a tap on the menu deploying buttons with the stylus results in an application program menu being displayed; and

displaying a soft input panel icon on the application menu bar, wherein a tap on the soft input panel icon with the stylus controls display of a shell program soft input panel.

9. The method of claim 8, wherein displaying the application menu bar for the active application program further includes displaying tool icons on the application menu bar with the menu deploying buttons and the soft input panel icon.

10. A computer readable medium for a stylus-based hand-held computing device having a display screen and a stylus for providing user input through the screen, the hand-held computing device adapted to run a shell program and at least one application program, the computer readable medium having computer executable instructions for performing steps comprising:

displaying information for an active application program in a middle portion of the screen; and

displaying a shell program controlled navigation bar at a top portion of the screen, wherein displaying the shell program controlled navigation bar includes displaying a navigation icon which when tapped by the stylus aids the user in navigating to other application programs, and wherein displaying the shell program controlled navigation bar further includes displaying on the navigation bar a title for the active program.

11. The computer readable medium of claim 10, and further including computer executable instructions for performing steps comprising:

receiving a first input from the user in the form of a tap on the navigation icon;

displaying a navigation menu in response to the first input; and

displaying on the shell program controlled navigation bar a shell program indicative title in place of the title for the active application program while the navigation menu is displayed.

12. The computer readable medium of claim 11, and further including computer executable instructions for performing steps comprising:

receiving a second input from the user selecting an alternate application program as the active program; and

displaying on the shell program controlled navigation bar a title for the alternate application program selected as the active program.

13. The computer readable medium of claim 12, wherein the computer executable instructions for displaying the title for the alternate application program selected as the active program further includes computer executable instructions for displaying the title for the alternate program on the navigation bar when the navigation menu is no longer displayed.

14. The computer readable medium of claim 10, and further including computer executable instructions for displaying a confirmation icon in a corner of the navigation bar, wherein the user provides a response to a query from the active application program by tapping with the stylus on the confirmation icon.

15. The computer readable medium of claim 10, and further including computer executable instructions for displaying an application menu bar for the active application program at a bottom portion of the screen.

16. The computer readable medium of claim 15, wherein the computer executable instructions for displaying the application menu bar for the active application program at the bottom portion of the screen further includes computer executable instructions for performing steps comprising:

displaying menu deploying buttons on the application menu bar, wherein a tap on the menu deploying buttons with the stylus results in an application program menu being displayed; and

displaying a soft input panel icon on the application menu bar, wherein a tap on the soft input panel icon with the stylus controls display of a shell program soft input panel.

17. The computer readable medium of claim 16, wherein the computer executable instructions for displaying the application menu bar for the active application program further includes computer executable instructions for displaying tool icons on the application menu bar with the menu deploying buttons and the soft input panel icon.

18. A method of generating a user interface for a stylus-based hand-held computing device having a display screen and a stylus for providing user input through the screen, the hand-held device running a shell program and at least one application program, the method comprising:

displaying information for an active application program in a middle portion of the screen; and

displaying an application menu bar for the active application program at a bottom portion of the screen such that the user can manipulate information for the active application program displayed in the middle portion of the screen by tapping with the stylus on the application menu bar without blocking the user's view of the middle portion of the screen, wherein displaying the application menu bar for the active application program further comprises displaying a soft input panel icon on the application menu bar, wherein a tap on the soft input panel icon with the stylus controls display of a shell program soft input panel.

19. The method of claim 18, wherein displaying the application menu bar further comprises: displaying menu deploying buttons on the application menu bar, wherein a tap on the menu deploying buttons with the stylus results in an application program menu being displayed.

20. The method of claim 19, wherein displaying the application menu bar for the active application program further includes displaying tool icons on the application menu bar with the menu deploying buttons and the soft input panel icon.

* * * * *

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(12) **United States Patent**
Reunert et al.

(10) **Patent No.: US 6,738,773 B1**
(45) **Date of Patent: May 18, 2004**

(54) **METHOD AND SYSTEM FOR TRANSFORMING DATA BETWEEN DISPARATE CAPACITY DATABASE SYSTEMS**

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(73) Assignee: **Microsoft Corporation**, Redmond, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/562,992**

(22) Filed: **May 1, 2000**

(51) **Int. Cl.**[7] **G06F 17/30**; G06F 7/00
(52) **U.S. Cl.** **707/10**; 707/8; 707/1; 707/104.1; 707/200; 707/201
(58) **Field of Search** 707/1–10, 100–104.1, 707/200–205; 709/200–225, 210–231

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Primary Examiner—Srirama Channavajjala
(74) *Attorney, Agent, or Firm*—Woodcock Washburn LLP

(57) **ABSTRACT**

In many computer systems, the rate of data from an input source may become significantly faster than a processor's ability to respond. This situation occurs when a faster and more modern system writes to an older and slower legacy system. The result of this interaction between disparate capacity systems may be system failure or data corruption, particularly due to overloading the slower system's input queue to the point where it can no longer catch up to its workload. The invention provides a method, system, and computer-readable medium having computer-executable instructions for transferring data between disparate capacity systems. The method comprises the steps of receiving transactions from a first computer system at a first rate and providing the transactions to a second computer system, wherein the second computer system receives the transactions at a second rate. The second computer system may be a database legacy database server and the first computer system may be an updated database server The second rate is set at a capacity of the second computer system. The method further delays for a predetermined period of time the transactions when the first rate exceeds the second rate. The predetermined period of time is a function of the second rate.

27 Claims, 6 Drawing Sheets

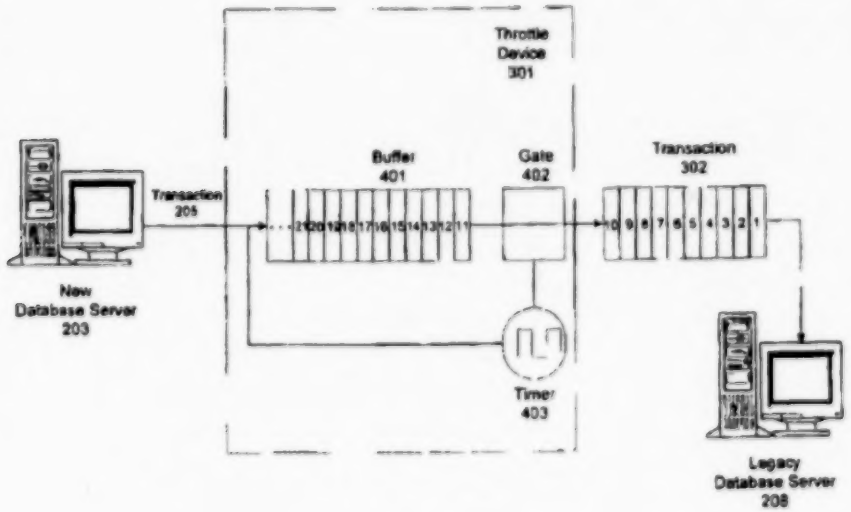
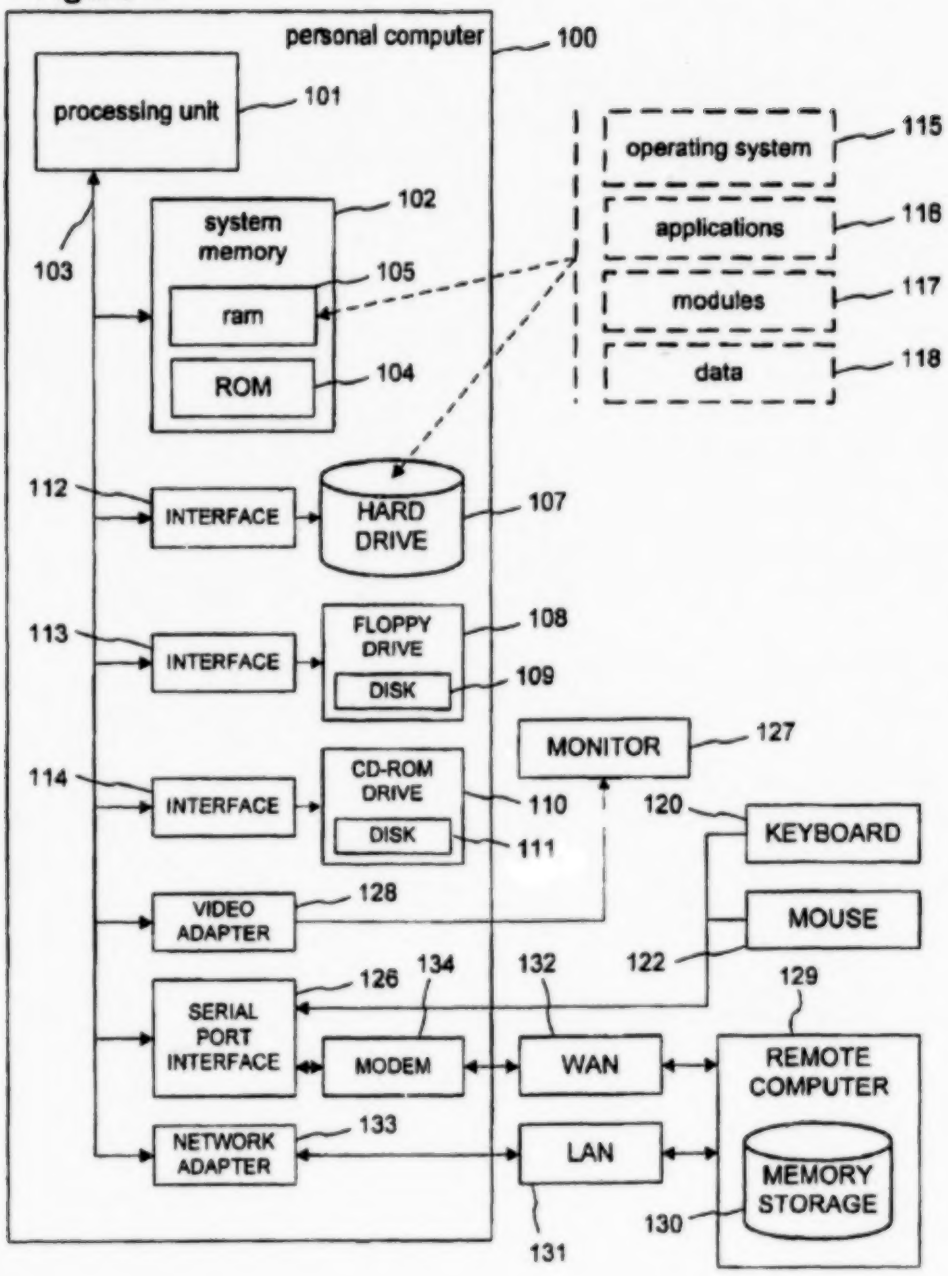


Figure 1


personal computer
100
processing unit
101
system memory
102
ram
105
ROM
104
103
operating system
115
applications
116
modules
117
data
118
112
INTERFACE
HARD DRIVE
107
113
INTERFACE
FLOPPY DRIVE
108
DISK
109
114
INTERFACE
CD-ROM DRIVE
110
DISK
111
MONITOR
127
120
KEYBOARD
MOUSE
122
VIDEO ADAPTER
128
SERIAL PORT INTERFACE
126
134
MODEM
132
WAN
129
REMOTE COMPUTER
NETWORK ADAPTER
133
LAN
MEMORY STORAGE
130
131

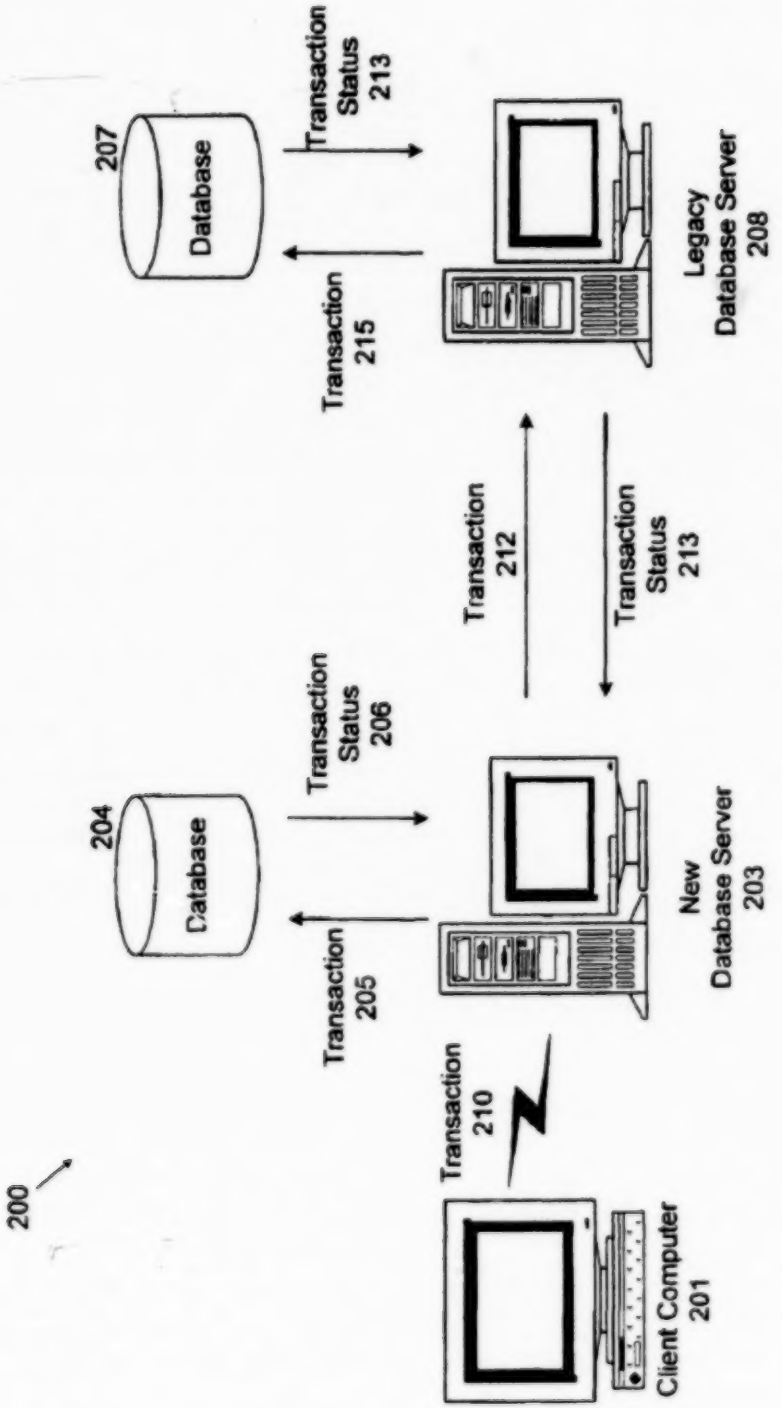

200
Client Computer
201
Transaction
210
Transaction
205
New
Database Server
203
Transaction
Status
206
204
Database
Transaction
212
Transaction
Status
213
Transaction
215
Legacy
Database Server
208
Transaction
Status
213
207
Database

Figure 2

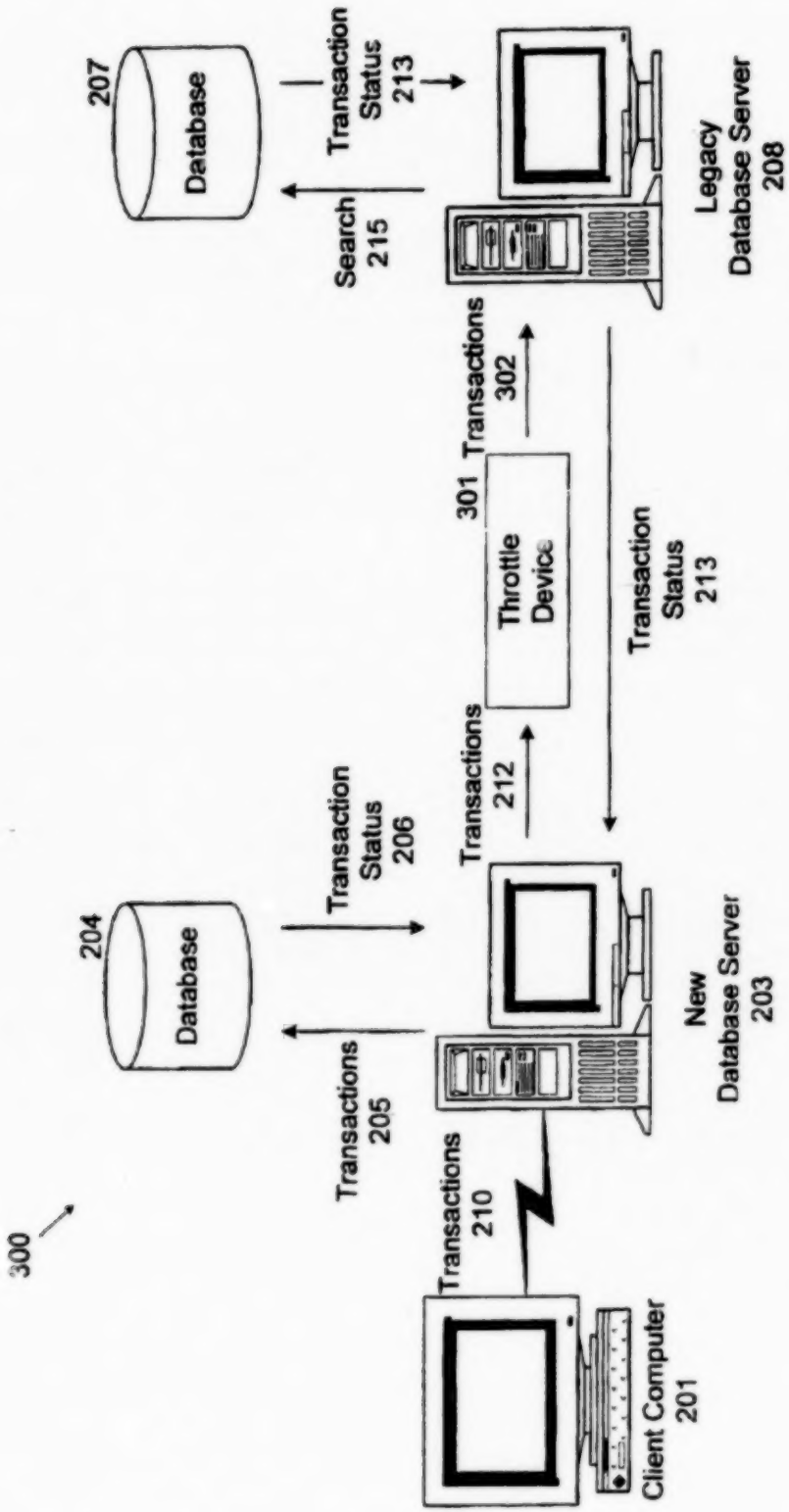

300
Client Computer
201
Transactions
210
Transactions
205
Database
204
Transaction
Status
206
New
Database Server
203
Transactions
212
Throttle
Device
301
Transactions
302
Transaction
Status
213
Transaction
Status
213
Search
215
Database
207
Legacy
Database Server
208

Figure 3

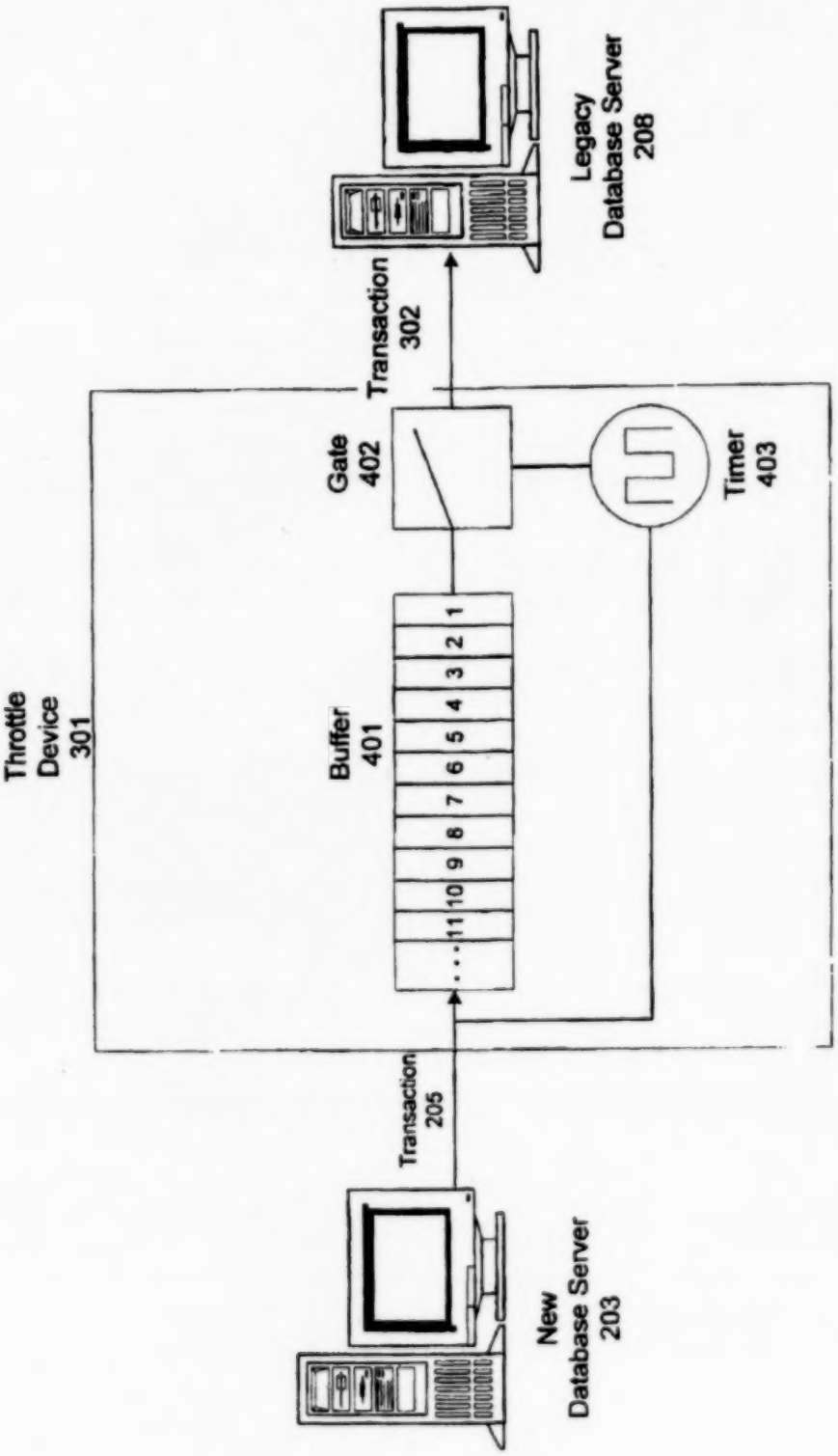

Legacy
Database Server
208
Transaction
302
Gate
402
Timer
403
Throttle
Device
301
Buffer
401
1
2
3
4
5
6
7
8
9
10
11
Transaction
205
New
Database Server
203

Figure 4

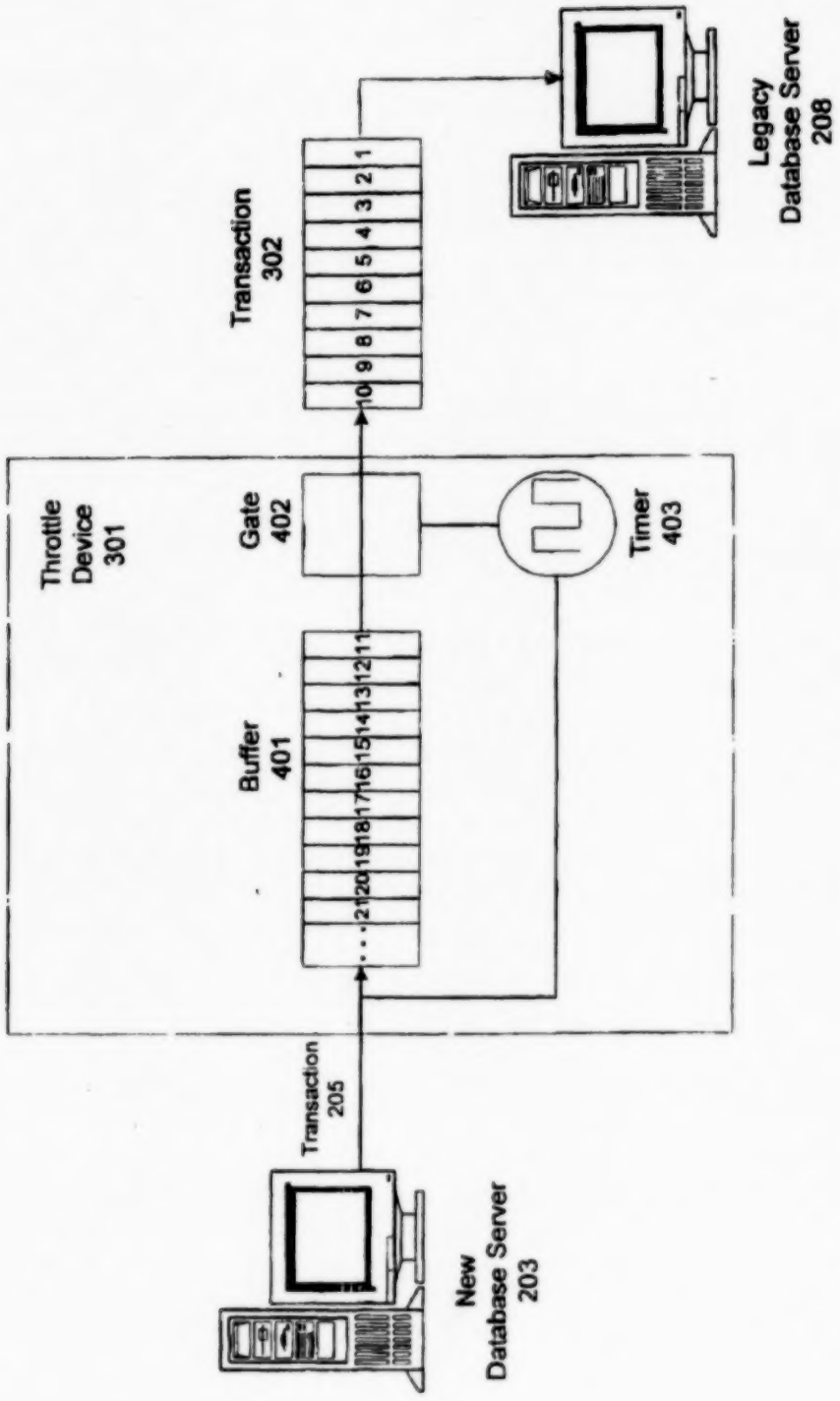

Legacy Database Server 208
Transaction 302
1 2 3 4 5 6 7 8 9 10
Throttle Device 301
Gate 402
Timer 403
Buffer 401
11 12 13 14 15 16 17 18 19 20 21
Transaction 205
New Database Server 203

Figure 5

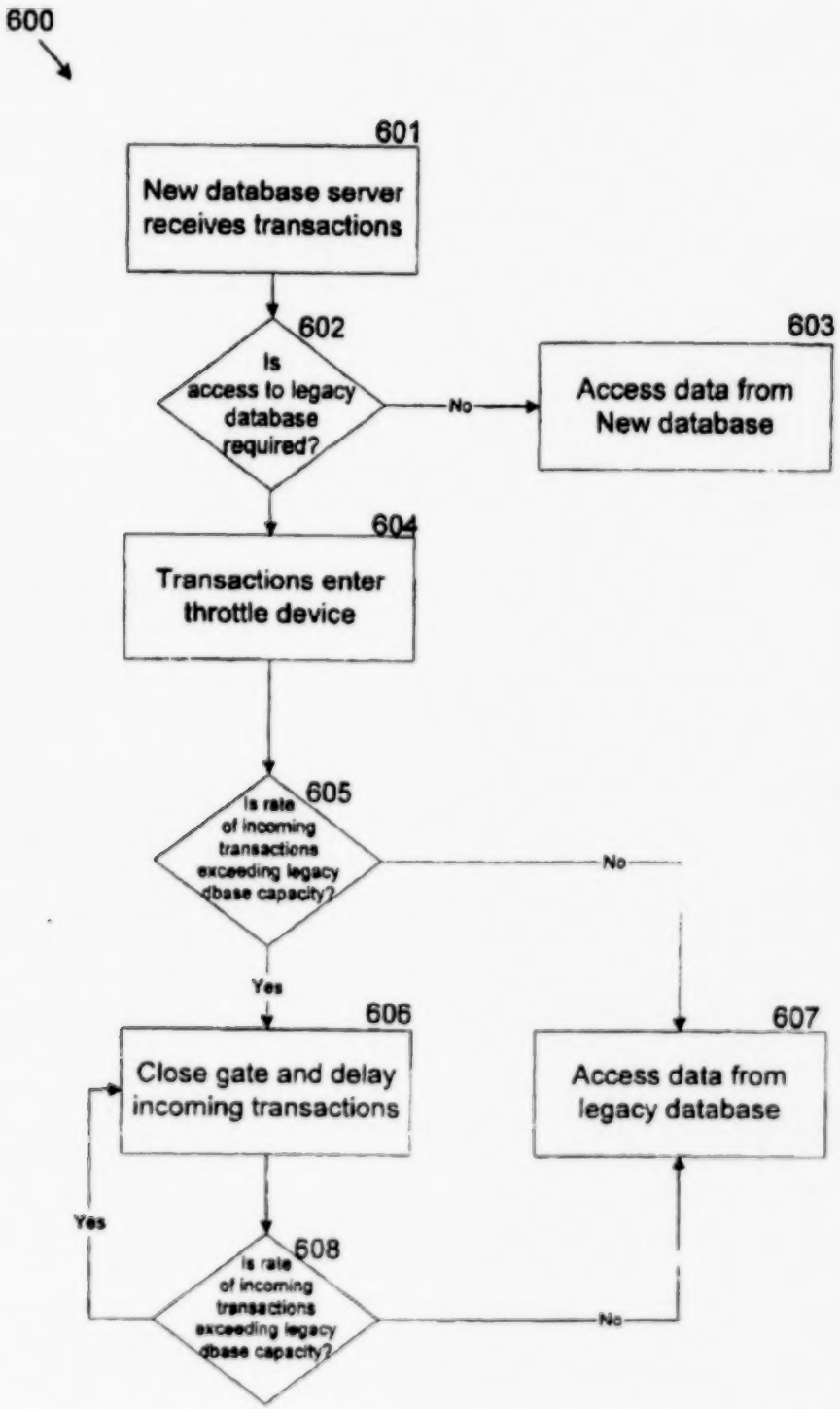

600
601
New database server receives transactions
602
Is access to legacy database required?
No
603
Access data from New database
604
Transactions enter throttle device
605
Is rate of incoming transactions exceeding legacy dbase capacity?
No
Yes
606
Close gate and delay incoming transactions
607
Access data from legacy database
Yes
608
Is rate of incoming transactions exceeding legacy dbase capacity?
No

Figure 6

METHOD AND SYSTEM FOR TRANSFORMING DATA BETWEEN DISPARATE CAPACITY DATABASE SYSTEMS

TECHNICAL FIELD

The present invention relates to the field of data transfer. More specifically, the present invention relates to transferring data between disparate capacity database systems.

BACKGROUND OF THE INVENTION

A database system is a collection of information organized in such a way that data may be accessed quickly. Database applications are present in everyday use including automated teller machines, flight reservation systems, and internet-account systems of all types. A database management system (DBMS) is a collection of programs that allow the entry, modification, and selection of data in a database. There are various types of DBMSs, ranging from small systems that run on personal computers to larger systems that run on mainframe systems.

Requests for information from a database are made by a database server using a query language. Different DBMSs support different query languages, including a standardized language called "structured query language" (SQL), for example. Database servers that use SQL are often referred to as "SQL servers." SQL supports distributed database systems, which are databases that are spread out over several server systems, yet act as one. A distributed database system must replicate and synchronize data among its many databases. In this way, a distributed database system may enable several users on a network to access the same database simultaneously without interfering with one another. Therefore, a distributed database system may have many SQL servers located in various locations, each responsible for certain portions of the database's overall operation.

In distributed database systems often there occurs a disparity in the relative capacity to perform work among the individual databases in the system. This can happen for a variety of reasons, including but not limited to new demand conditions, addition of newer hardware in one subsystem which is substantially faster than the legacy systems, and progressive redesign and redeployment of portions of an existing system. Moreover, it may be more efficient to gain the functionality of a new distributed database by dividing the database's operation between a newer and faster database server and the legacy server. In either case, the result is that various versions of database servers simultaneously may exist in one database system.

Although having multiple versions of SQL servers in one database system may be more cost efficient, often this scenario causes technical concerns. This is particularly true, for example, where a database system is designed to allow a faster upgraded database server to automatically transact with a slower legacy database that may be in various states of repair. In this instance, transactions may be received from the upgraded server at a rate faster than the legacy server can process them. This disparate capacity is particularly troubling in a distributed database system where the overwhelming rate of transactions entering the legacy system may break down the replication process and return corrupted or stale data to the upgraded server.

To date, when confronted with these disparate server systems, administrators are forced to upgrade the slower legacy system to be compatible with the faster upgraded system. Therefore, there exists a need to regulate incoming transactions from the upgraded server to a rate that is compatible with the slower legacy server.

SUMMARY OF THE INVENTION

In many computer systems, the rate of data from an input source may become significantly faster than a processor's ability to respond. This situation occurs, for example, when a faster and more modern system writes to an older and slower legacy system. Such interactions between disparate capacity systems may result in failure or data corruption, particularly due to overloading the slower system's input queue to the point where it can no longer catch up to its workload. For example, in a database computer system, when the rate of incoming transactions from an updated database system exceeds a smaller capacity database system's ability to process transactions, system failure may occur. In some instances when this situation arises, system administrators may upgrade the legacy database system to operate with the updated database system. In running production systems, this is often operationally unfeasible, or not feasible in a reasonable time frame. Where system upgrade is impossible or unfeasible, there exists a need to slow incoming transactions down to a rate compatible with the slower legacy system.

The invention provides a method, system, and computer-readable medium having computer-executable instructions for transferring data between disparate capacity systems. The method comprises the steps of receiving transactions from a first computer system at a first rate and providing the transactions to a second computer system, wherein the second computer system receives the transactions at a second rate. The second computer system may be a database legacy database server and the first computer system may be an updated database server The second rate is set at a capacity of the second computer system. The method further delays for a predetermined period of time the transactions when the first rate exceeds the second rate. The predetermined period of time is a function of the second rate.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features of the invention are further apparent from the following detailed description of presently preferred embodiments of the invention taken in conjunction with the accompanying drawings, of which:

FIG. **1** is a block diagram of a suitable computing environment in which the present invention may be implemented;

FIG. **2** is a block diagram of a client-server database system in which the present invention may be implemented;

FIG. **3** is a block diagram of a client-server database system, according to the present invention;

FIG. **4** provides a schematic diagram of a throttle device, according to the present invention;

FIG. **5** provides another schematic diagram of a throttle device, according to the present invention; and

FIG. **6** provides a flow diagram of a method for transferring data between disparate capacity databases in a client-server database system, according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Operating Environment

FIG. **1** and the following discussion are intended to provide a brief, general description of a suitable computing

environment in which the invention may be implemented. While the invention will be described in the general context of computer-executable instructions of a computer program that runs on a personal computer, those skilled in the art will recognize that the invention also may be implemented in combination with other program modules. Generally, program modules include routines, programs, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, mainframe computers, and the like. The illustrated embodiment of the invention also is practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. However, some embodiments of the invention can be practiced on standalone computers. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

With reference to FIG. **1**, one system for implementing the invention includes a conventional personal computer **100**, including a processing unit **101**, a system memory **102**, and a system bus **103** that couples various system components including the system memory to the processing unit **101**. Processing unit **101** may be any of various commercially available processors. Dual microprocessors and other multiprocessor architectures also can be used as processing unit **101**.

System bus **103** may be any of several types of bus structure including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of conventional bus architectures. System memory **102** includes read only memory (ROM) **104** and random access memory (RAM) **105**. A basic input/output system (BIOS), containing the basic routines that help to transfer information between elements within the personal computer **100**, such as during start-up, is stored in ROM **104**.

Personal computer **100** further includes a hard disk drive **107** and a magnetic disk drive **108** to read from or write to a removable disk **109**, and an optical disk drive **110** to read a CD-ROM disk **111** or to read from or write to other optical media. Hard disk drive **107**, magnetic disk drive **108**, and optical disk drive **110** are connected to system bus **103** by a hard disk drive interface **112**, a magnetic disk drive interface **113**, and an optical drive interface **114**, respectively. The drives and their associated computer-readable media provide nonvolatile storage of data, data structures, computer-executable instructions, etc. for personal computer **100**. Although the description of computer-readable media above refers to a hard disk, a removable magnetic disk and a CD, it should be appreciated by those skilled in the art that other types of media which are readable by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, and the like, may also be used in the operating environment.

A number of program modules may be stored in the drives and RAM **105**, including an operating system **115**, one or more application programs **116**, other program modules **117**, and program data **118**.

A user may enter commands and information into personal computer **100** through a keyboard **120** and pointing device, such as a mouse **122**. Other input devices (not shown) may include a microphone, joystick, game pad, satellite dish, scanner, or the like. These and other input devices are often connected to processing unit **101** through a serial port interface **126** that is coupled to system bus **103**, but may be connected by other interfaces, such as a parallel port, game port or a universal serial bus (USB). A monitor **127** or other type of display device is also connected to system bus **103** via an interface, such as a video adapter **128**. In addition to monitor **127**, personal computers typically include other peripheral output devices (not shown), such as speakers and printers.

Personal computer **100** may operate in a networked environment using logical connections to one or more remote computers, such as a remote computer **129**. Remote computer **129** may be a server, a router, a peer device or other common network node, and typically includes many or all of the elements described relative to personal computer **100**, although only a memory storage device **130** has been illustrated in FIG. **2**. The logical connections depicted in FIG. **2** include a local area network (LAN) **131** and a wide area network (WAN) **132**. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, personal computer **100** is connected to local network **131** through a network interface or adapter **133**. When used in a WAN networking environment, personal computer **100** typically includes a modem **134** or other means for establishing communications over wide area network **132**, such as the Internet. Modem **134**, which may be internal or external, is connected to system bus **103** via serial port interface **126**. In a networked environment, program modules depicted relative to personal computer **100**, or portions thereof, may be stored in the remote memory storage device. It will be appreciated that the network connections shown are one example, and that other means of establishing a communications link between the computers may be used.

In accordance with the practices of persons skilled in the art of computer programming, the present invention is described below with reference to acts and symbolic representations of operations that are performed by personal computer **100**, unless indicated otherwise. Such acts and operations are sometimes referred to as being computer-executed. It will be appreciated that the acts and symbolically represented operations include the manipulation by the processing unit **101** of electrical signals representing data bits which causes a resulting transformation or reduction of the electrical signal representation, and the maintenance of data bits at memory locations in the memory system (including system memory **102**, hard drive **107**, floppy disks **109**, and CD-ROM **111**) to thereby reconfigure or otherwise alter the computer system's operation, as well as other processing of signals. The memory locations where data bits are maintained are physical locations that have particular electrical, magnetic, or optical properties corresponding to the data bits.

Database Client-Server System

FIG. **2** is a block diagram of a client-server database system **200** in which the present invention may be implemented. Client-server system **200** includes a client computer **201** coupled to a new database server **203**. Client computer **201** may be a personal computer (as shown in FIG. **1**) containing software that allows a user to access a database, for example, ACCESS available from MICROSOFT Corporation. It should be appreciated that while one client computer **201** is shown in FIG. **2**, in practice, there may be many client computers simultaneously accessing new data-

base processor **203**. Client computer **201** sends a transaction **210** to new database server **203**. The connection between client computer **201** and new database processor **203** may be a LAN or WAN, for example, the Internet. New database server **203** is coupled to an older, slower legacy database server **208**. New database server **203** may be an upgraded and updated version of legacy database server **208**, both in terms of faster hardware and/or next generation software. New database server **203** is coupled to database **204**, and legacy database server **208** is coupled to database **207**.

In operation, client computer **201** sends a transaction **210** to new database server **203**. It should be appreciated that transaction **210** may include a set of instructions necessary to execute a particular operation. The set of instructions may include both a request to read data from a database and a request to write data to a database. Once new database server **203** receives transaction **210** from computer client **201**, new database server **203** determines whether completion of transaction **210** requires access to data located in database **204** or database **207**. If transaction **210** requires access to data located in database **204**, new database server **203** sends a transaction **205** to database **204**. Upon completion of transaction **205**, new database server **203** receives a transaction status **206** indicating that transaction **205** is complete. Alternatively, transaction status **206** may provide an error signal to new database server **203** indicating that transaction **205** was not completed. If new database server **203** determines that some or all of transaction **210** requires access to data located in database **207**, new database server **203** sends a transaction **212** to legacy database server **208**. Legacy database server **208** then sends a transaction **215** to database **207**. Legacy database server **208** receives a transaction status **213** indicating that transaction **212** is complete. Alternatively, transaction status **213** may provide an error signal to new database server **203** indicating that transaction **212** was not completed.

Data Throttling Operation

FIG. **3** is a block diagram of a database client-server system **300**, according to the present invention. FIG. **3** is similar to the block diagram shown in FIG. **2**, except that a throttle device **301** is coupled between new database server **203** and legacy database server **208**. Although throttle device **301** is shown separate from new database server **203**, it should be appreciated that throttle device **301** may be a hardware or software component of new database server **203** or of legacy database server **208**. As shown in FIG. **3**, transactions **205** from new database server **203** enter throttle device **301**. Transactions **302** are then provided by throttle device **301** to legacy database server **208**. Because new database server **203** is an upgraded and updated version of older legacy database server **208**, the rate that at which transactions **205** are received from new database server **203** may be faster than the rate at which legacy database server **208** can process incoming transactions **302**. Therefore, throttle device **301** regulates received transactions **205** to a rate that is compatible with the processing speed of slower legacy database server **208**.

FIG. **4** provides a schematic diagram of throttle device **301**, according to the invention. As discussed, new database server **203** is capable of providing transactions **205** at a rate faster than the rate at which legacy database server **208** is capable of processing incoming transactions **302**. Because the capacity of legacy database server **208** is known to the database system administrator, throttle device **301** can be set to monitor the rate of incoming transactions **205** from new database server **203**, and delay incoming transactions **205** when they arrive at a rate that exceeds legacy database server's **208** predetermined capacity. Alternatively, throttle device **301** will allow transactions **205** to pass to legacy database server **208** without delay, when incoming transactions **205** arrive at a rate less than legacy database server's **208** predetermined capacity.

As shown in FIG. **4**, throttle device **301** includes a buffer **401** (e.g., a first-in first-out queue) that is coupled to a gate **402**. A timer **403** is coupled to gate **402** and to incoming transactions **205**. Timer **403** is set to permit transactions **205** to enter legacy database server **208** at a rate consistent with the processing speed of legacy database server **208**. When transactions **205** begin to exceed the predetermined rate at which legacy database server **208** is capable of processing transactions **302**, timer **403** closes gate **402**. As shown in FIG. **4**, when gate **402** is closed (i.e., not allowing transactions in buffer **401** to pass onto legacy database server **208**), transactions **205** provided by new database server **203** enter throttle device **301** and are stored in buffer **401**. In FIG. **4**, each of buffered transactions **205** are numbered (e.g., 1 through 11) in the order in which they are received. The number of actual transactions **205** that buffer **401** can store will be determined by the rate at which transactions **205** are provided by new database server **203** and the rate at which transactions **302** can be processed by slower legacy database server **208**. For example, FIG. **4** shows at least eleven received queries **205** located in buffer **401**. In effect, therefore, timer **403** allows transactions queued in buffer **401** to pass to legacy database server **208** at the same rate, regardless of the rate of incoming transactions **205**. If the rate of incoming transactions **205** is less than the processing rate of legacy database server **208**, transactions **205** will pass through throttling device **301** without delay. If, on the other hand, the rate of incoming transactions **205** is greater than the processing rate of legacy database server **208**, throttling device **301** will begin to store transactions **205** in buffer **401**.

Notably, the predetermined rate at which legacy database server **208** can process transactions **302** may be set, and dynamically adjusted, in timer **403**. For example, if legacy database server **208** were replaced with a system having more or less processing capacity, an administrator could adjust the predetermine rate in timer **403** to send the transactions more or less often, as the case may be.

FIG. **5** provides a detailed schematic diagram of throttle device **301** in which gate **402** is shown open . If timer **403** notices that transactions **205** are not exceeding the rate at which legacy database server can process, timer **403** will open gate **402**, thus allowing transactions **302** to enter legacy database server **208**. As shown in FIG. **5**, transactions 1 through 10 have been sent to legacy database server **208** by throttle device **301**.

The following code provides an example of how throttle device **301** may operate:

The timer is represented by the following code fragment:

```
HRESULT WatchDogThreadFunction(LPVOID lpParam)
{
  HRESULT hResult = S_OK;
  DWORD   dwWatchDogWaitTime = 0;
  DWORD   dwWaitResult = 0;
  do
  {
    dwWaitResult = WaitForSingleObject( g_h WatchDogEvent,
g_ulThrottleDelayInterval);
  if ( WAIT_TIMEOUT == dwWaitResult )
```

-continued

```
        SetEvent( g_hSerializeEvent);
      } while ( FALSE == g_bKillWatchDogThread );
      return hResult;
    }
```

The above timer sends a signal every g_ulThrottleDelayInterval to the main process shown below:

```
    UINT MainQProcessorThreadFunction( LPVOID pParam)
    {
      do
      {
        do
        {
      //wait on serialize event to get signalled
          dwWaitResult = WaitForSingleObject( g_hSerializeEvent,
    SERIALIZE_EVENT_WAIT);
        } while (( WAIT_TIMEOUT == dwWaitResult) &&
    (FALSE == pDriver->GetStopThreadsFlag( )));
        DoWork( );
      } while (FALSE == pDriver->GetStopThreadsFlag( ));
      return 0;
    }
```

The example code has three main components. The first main component is a "throttle thread," respresented by "HRESULT WatchDogThreadFunction(LPVOID lpParam))." The "throttle thread" establishes the timer function of throttle device **301**. The "throttle thread" includes a "throttle event" represented by "g_hWatchDogEvent" and a "throttle value" represented by "g_ulThrottleDelayInterval." The second component is a "worker thread," respresented by "UINT MainQProcessorThreadFunction(LPVOID pParam)." The "worker thread" processes queue messages and provides them to legacy database server **208**. The third main component is called a "signalwork" event, and is represented by "g_hSerializeEvent." The "worker thread" waits on "signalwork" indefinitely. When the "throttle event" times out, as determined by the "throttle value," the "throttle event" signals the "signalwork" to allow the "worker thread" to process a next transaction. Increasing the predetermined interval set by the "throttle value" allows the "worker thread" to be executed at a slower rate, commensurate with legacy database server **208**.

FIG. **6** provides a flow diagram **600** of a method for transferring data between disparate capacity databases in a client-server database system. In step **601**, client computer **201** provides transactions **205** to new database server **203**. In step **602**, new database server **203** determines whether any of transactions **205** require access to database **204** or legacy database **207**. If transactions **205** require access to database **204**, new database server **203** accesses database **204**.

If, on the other hand, transactions **205** require access to legacy database **207**, new database server **203** sends transactions **205** to throttle device **301**, in step **604**. In step **605**, it is determined whether the rate of incoming transactions **205** has exceeded legacy database server's **208** capacity. If the rate of incoming transactions has not exceeded legacy database server's **208** capacity, data is accessed from legacy database **207**, in step **607**. If, on the other hand, the rate of incoming transactions has exceeded legacy database server's **208** capacity, in step **606**, gate **402** is opened and incoming transactions **205** are delayed from entering legacy database server **208**.

In step **608**, once it is determined that the rate of incoming transactions **205** has not exceeded legacy database server's **208** capacity, data is accessed from legacy database **207**, in step **607**.

The present invention is directed to a system and method for transferring data between disparate capacity systems, but is not limited to database components, regardless of any specific description in the drawing or examples set forth herein. It will be understood that the present invention is not limited to use of any of the particular components or devices herein. Indeed, this invention can be used in any application that transfers data between disparate capacity systems or components. For example, although the present invention was described in the context of disparate capacity systems, it should be appreciated that the invention may apply to equivalent capacity systems that are run at different speeds to increase overall performance. Furthermore, the system disclosed in the present invention can be used with the method of the present invention or a variety of other applications.

While the present invention has been particularly shown and described with reference to the presently preferred embodiments thereof, it will be understood by those skilled in the art that the invention is not limited to the embodiments specifically disclosed herein. Those skilled in the art will appreciate that various changes and adaptations of the present invention may be made in the form and details of these embodiments without departing from the true spirit and scope of the invention as defined by the following claims.

We claim:

1. A method for transferring data between disparate capacity database systems, comprising the steps of:

receiving transactions from a first database system at a first rate;

providing said transactions to a second database system, wherein said second database system is capable of receiving said transactions at a second rate; and

determining if said transactions provided by said first database system at said first rate exceed said second rate of said second database system; and

delaying for a predetermined period of time said transactions when said first rate exceeds said second rate, wherein said predetermined period of time is adjusted as a function of said capacity of said second database system.

2. The method of claim **1**, wherein said predetermined period of time is a function of said second rate.

3. The method of claim **1**, wherein said second database system is a transaction processor and said first database system is a data retrieval/entry device.

4. The method of claim **1**, wherein said second database system is a legacy database server and said first database system is an updated database server.

5. The method of claim **1**, wherein said predetermined period of time is a function of a processing speed of said second database system.

6. The method of claim **1**, wherein said predetermined period of time is a function of a capability of said second database system to process said transactions.

7. A device for interfacing disparate capacity computer systems, comprising:

an input component for receiving transactions from a first database system at a first rate;

an output component for providing transactions to a second database system at a second rate; and

a buffer component coupled to said input component and said output component, wherein said buffer component determines if said transactions provided by said first database system at said first rate exceed said second rate of said second database system, and wherein said buffer component delays said transactions for a prede-

termined period of time when said first rate exceeds said second rate, wherein said second rate is set at a capacity of said second database system.

8. The device of claim 7, wherein said transactions include data requests and/or data entries.

9. The device of claim 7, wherein said predetermined period of time is a function of said second rate.

10. The device of claim 7, wherein said second database system is a legacy database server and said first database system is an updated database server.

11. The device of claim 7, wherein said first database system is a data retrieval/entry device, and wherein said second database system is a transaction processor.

12. The device of claim 7, wherein said predetermined period of time is a function of a processing speed of said second database system.

13. A disparate capacity computing system, comprising:

a first database system that generates transactions at a first rate;

a queue coupled to said first database system, wherein said queue receives said transactions from said first database system;

a gate device coupled to said queue, wherein said gate device permits said transactions to exit said queue at a predetermined rate; and

a second database system coupled to said gate device, wherein said second database system processes said transactions at a second rate.

14. The system of claim 13, wherein said transactions include data requests and/or data entries.

15. The system of claim 13, wherein said predetermined rate is a function of said second database system.

16. The system of claim 13, wherein said second database system is a transaction processor and wherein said first database system is a data retrieval/entry device.

17. The system of claim 13, further comprising inputting said transactions to said second database system after said predetermined delay when said first rate exceeds said second rate.

18. The system of claim 13, wherein said predetermined rate is a function of a processing speed of said second database system.

19. The system of claim 13, wherein said predetermined rate is a function of a capability of said second database to process said transactions.

20. A computer-readable medium having computer-executable instructions for performing the steps of:

receiving transactions from a first database system at a first rate;

providing said transactions to a second database system, wherein said second database system receives said transactions at a second rate;

determining if said transactions provided by said first database system at said first rate exceed said second rate of said second database system; and

delaying for a predetermined period of time said transactions when said first rate exceeds said second rate, wherein said predetermined period of time is adjusted as a function of said capacity of said second database system.

21. The computer-readable medium of claim 20, wherein said predetermined period of time is a function of said second rate.

22. The computer-readable medium of claim 20, wherein said second rate is set at a capacity of said second database system.

23. The computer-readable medium of claim 20, wherein said second database system is a transaction processor and said first database system is a data retrieval/entry device.

24. The computer-readable medium of claim 20, wherein said second database system is a legacy database server and said first database system is an updated database server.

25. The computer-readable medium of claim 20, wherein said predetermined period of time is a function of a processing speed of said second database system.

26. The computer-readable medium of claim 20, wherein said predetermined period of time is a function of a capability of said second database system to process said transactions.

27. A throttling device for interfacing disparate capacity computer database systems, comprising:

an input component for receiving transactions from a first database system at a first rate, wherein said transactions include data requests and/or data entries;

an output component for providing transactions to a second database system at a second rate; and

a buffer component coupled to said input component and said output component for delaying said transactions for a predetermined period of time when said first rate exceeds said second rate, wherein said predetermined period of time is a function of said second rate.

* * * * *

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(14)

No. 05-1056

IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

BRIEF FOR PETITIONER

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QUESTIONS PRESENTED

Title 35 U.S.C. § 271(f) provides that it is an act of patent infringement to "suppl[y] . . . from the United States" a "component of a patented invention" in a manner that induces the combination of that component with other components outside of the United States. The questions presented are:

I. Whether copies of a "component" made in a foreign country are "supplie[d] . . . from the United States"; and

II. Whether a "binary sequence of numbers that lacks physical existence" may be considered a "component of a patented invention" within the meaning of Section 271(f).

PARTIES TO THE PROCEEDING AND RULE 29.6 STATEMENT

The caption contains the names of all the parties to the proceeding below.

The corporate disclosure statement included in the petition for a writ of certiorari remains accurate.

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BRIEF FOR PETITIONER

OPINIONS BELOW

The opinion of the court of appeals (Pet. App. 1a-19a) is reported at 414 F.3d 1366. The opinion of the district court (Pet. App. 20a-38a) is not officially reported but can be accessed at 2004 WL 406640.

JURISDICTION

The judgment of the court of appeals was entered on July 13, 2005. A timely petition for rehearing was denied on October 20, 2005. Pet. App. 39a. On January 12, 2006, Justice Stevens extended the time within which to file a petition for a writ of certiorari to and including February 17, 2006. No. 05A606. The petition for a writ of certiorari was filed on that date and was granted on October 27, 2006. This Court has jurisdiction under 28 U.S.C. § 1254(1).

STATUTORY PROVISION INVOLVED

Title 35 U.S.C. § 271(f) provides:

§ 271. Infringement of patent

* * *

(f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

(2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or

commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

* * *

STATEMENT

On summary judgment, the district court held that Microsoft infringed AT&T's patent under Section 271(f) of the Patent Act—which prohibits "suppl[ying] ... from the United States" a "component of a patented invention"—based on the use of U.S.-supplied master versions of the object code for the Windows operating system by foreign manufacturers, who copied the master versions and, in turn, installed the foreign-made copies on foreign-made computers that were sold to foreign end-users. In a 2-1 decision, the Federal Circuit affirmed.

1. AT&T holds United States Reissue Patent 32,580 ("the '580 patent") entitled "Digital Speech Coder." Pet. App. 44a. AT&T's invention "relates to speech processing and more particularly to digital speech coding arrangements." '580 patent, col. 1:9-10 (Supp. J.A. 8). Speech coding is the process of compressing a digital speech signal in order to facilitate its electronic transmission and storage. The invention disclosed by the '580 patent aims to "provide improved speech coding of high quality at lower bit rates" than predecessor speech coding technology. *Id.* at col. 1:58-60 (Supp. J.A. 8). The '580 patent claims certain improved methods of speech coding and certain speech processor circuits capable of carrying out the improved speech coding methods. *See id.* at cols. 17-24 (Supp. J.A. 16-19).

Of particular relevance here is claim 40 of the '580 patent, which recites an "[a]pparatus for producing a speech

message comprising" various means for implementing the speech coding methods claimed elsewhere in the patent. '580 patent, col. 23:24-25 (Supp. J.A. 19) (italics omitted). A preferred embodiment of the inventive device is a general purpose computer programmed to act as the claimed speech processor. Indeed, the inventor appended to the '580 patent the source code for certain computer programs (written in FORTRAN programming language) that he used to instruct a Bell Labs supercomputer to test the improved speech coding methods. *Id.* apps. A-D (Supp. J.A. 12-15). The '580 patent thus teaches one skilled in the art to program a general purpose computer to function as the patented speech coding device. This invention—claimed more than a quarter-century ago—is today widely used in mobile phones and personal computers to achieve high-quality reproduction of digitally recorded speech.

Several computer programs created and licensed by Microsoft, most notably its flagship Windows operating system program, include one or more "speech codecs": computer programs that, when installed, make a general purpose computer "capable of coding—converting a speech signal into a more compact code—and decoding—converting the more compact code back into a signal that sounds like the original speech signal." Am. Compl. ¶ 14 (J.A. 15); *see also* Pet. App. 3a.

The operative complaint alleges that "products that have incorporated and/or supported" Microsoft's speech codecs—including all computers in the United States running the Windows operating system—infringe the '580 patent's apparatus claims because they are capable of recording, storing, and playing back speech in a manner substantially similar to that described in the '580 patent. Am. Compl. ¶ 44 (J.A. 20). AT&T alleged that Microsoft induced those acts of infringement by licensing copies of the object code for the Windows operating system, which when installed on a compatible computer system is capable of performing the function of the

patented invention. Microsoft eventually stipulated that, by licensing copies of the Windows object code to manufacturers of computers that are ultimately sold in the United States, it induced infringement of the '580 patent. *See* Pet. App. 42a; *see also* 35 U.S.C. § 271(b).[1]

AT&T also alleged that Microsoft had infringed the apparatus claims of the patent under Section 271(f) by exporting a "component"—the "Windows software containing the allegedly infringing codecs"—that was combined overseas to produce an apparatus that, had it been produced in the United States, would infringe. Pet. App. 24a.

Microsoft transmits master versions of the Windows operating system program to foreign computer manufacturers either on "golden master disks" or in encrypted electronic transmissions. Pet. App. 45a-46a ¶¶ 5, 7. The parties have stipulated that neither the electronically transmitted master version nor the golden master "disk itself is []ever installed on a computer that is then sold." *Id.* at 45a ¶ 5. Each foreign manufacturer instead uses the master version to produce, in the foreign country, duplicate copies of the Windows object code. *Id.* at 45a-46a ¶¶ 5-7. It is these copies, and only these copies, that are installed on foreign-manufactured computers. *Id.* at 46a ¶ 9.[2]

On summary judgment, AT&T asserted that the golden master disks and encrypted electronic transmissions containing Windows object code constitute "components" of

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[1] Microsoft also installed the Windows object code on Microsoft-owned computers during the software development process, and consequently stipulated to direct infringement under Section 271(a).

[2] In fact, the "installation" process itself involves an act of duplication. *See Stenograph L.L.C. v. Bossard Assocs., Inc.*, 144 F.3d 96, 100 (D.C. Cir. 1998) ("installation of software onto a computer results in 'copying'"). The object code is read from the golden master disk and physically scrivened onto the foreign computer's hard drive. *See* RON WHITE, HOW COMPUTERS WORK 144-45, 172-73 (8th ed. 2006).

AT&T's patented Digital Speech Coder apparatus and that the foreign-produced copies of the object code installed on the foreign-manufactured computers are "supplie[d]" by Microsoft "from the United States." Pet. App. 46a ¶ 10. Microsoft argued conversely that the foreign replicators—not Microsoft—provided the versions of Windows actually installed on the foreign-made computers, and that what Microsoft did supply—master versions of the machine-readable object code—were not "components" of AT&T's patented invention within the meaning of Section 271(f). *Ibid.*

2. The district court denied Microsoft's motion for partial summary judgment. Pet. App. 22a. The court held that the Windows object code sent by golden master disks and encrypted electronic transmissions to foreign manufacturers was a "component" of AT&T's Digital Speech Coder device. *Id.* at 31a. The court further held that Microsoft had "supplie[d] . . . from the United States" each of the tens of millions of foreign-made copies of the Windows object code because "replication of the object code abroad" is different in kind from the "manufactur[e] . . . of it . . . abroad." *Id.* at 35a.

3. A divided panel of the Federal Circuit affirmed. Pet. App. 11a.

a. In determining whether the computer programs embodied in the golden master disks and encrypted electronic transmissions were "components" of AT&T's patented invention, the panel majority relied on *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005), which was decided while the appeal in this case was pending. *Eolas* held that "computer readable program code" is a "component" within the meaning of Section 271(f) because that code is "the key part" of a patented computer invention that "drives the functional nucleus of the finished computer product." *Ibid.* (internal quotation marks omitted). The panel in this case adopted the *Eo-*

las court's conclusion without expanding upon its analysis. Pet. App. 4a.

The panel majority further concluded that Microsoft was liable under Section 271(f) for each foreign copy of the computer-readable Windows object code produced using the golden master disks and electronic transmissions shipped from the United States. Pet. App. 7a. The court held that each of these foreign-made copies had "*essentially* been supplied from the United States" because "[c]opying . . . is part and parcel of software distribution," and therefore, "for software 'components,' the act of copying is subsumed in the act of 'supplying.'" *Id.* at 6a, 7a (emphasis added); *see also id.* at 7a ("It is inherent in the nature of software that [it] . . . may be replicated"). In reaching this conclusion, the court candidly acknowledged that it was interpreting Section 271(f) to account for "the realities of software distribution" and to ensure that the statute "remain[s] effective" in a rapidly changing world. *Id.* at 7a, 10a. A conclusion that foreign-made copies were not supplied from the United States, the panel majority asserted, would "permit[] a technical avoidance of the statute by ignoring the advances in a field of technology . . . that developed after the enactment of § 271(f)" and "would emasculate § 271(f) for software inventions." *Id.* at 6a n.2, 10a. The panel majority accorded no significance to the ready availability of foreign patents to protect AT&T from acts of foreign infringement, finding it more appropriate to "construe our statutes irrespective of the existence or non-existence of foreign patents." *Id.* at 6a n.2.

b. Judge Rader dissented. Although he agreed that *Eolas* was controlling as to the issue of whether the object code for the Windows operating system could be a "component of a patented invention," Judge Rader disagreed with the majority's conclusion that the foreign-manufactured copies of the Windows object code had been "supplie[d] . . . from the United States." Pet. App. 11a.

Judge Rader rejected the panel majority's contention that the "act of copying is subsumed in the act of 'supplying,'" Pet. App. 6a, finding such reasoning to be contrary to the "ordinary meaning of 'supplies.'" *Id.* at 12a. The necessary consequence of the panel majority's holding, Judge Rader recognized, was to "provide[] extraterritorial expansion to U.S. law by punishing under U.S. law 'copying' that occurs abroad." *Ibid.* The majority opinion was flawed, Judge Rader continued, because it "holds Microsoft liable for the activities of *foreign manufacturers making copies* of the patented component abroad" in the absence of a clear indication of Congress's intention to do so. *Id.* at 16a-17a. Judge Rader concluded that—rather than seeking to give extraterritorial effect to U.S. patent law—the proper course of action for AT&T would have been to "protect its *foreign* markets from *foreign* competitors by obtaining and enforcing *foreign* patents." *Id.* at 18a-19a (emphases added).

SUMMARY OF ARGUMENT

In holding Microsoft liable for infringing AT&T's patent under 35 U.S.C. § 271(f), the Federal Circuit committed two significant errors. *First*, it incorrectly concluded that *copies* of the object code for the Windows operating system made in a foreign country are nonetheless "supplie[d] . . . from the United States"; and *second*, it incorrectly concluded that what Microsoft did supply from the United States—golden master disks and encrypted transmissions containing the Windows object code—could be considered "components" of AT&T's patented invention under Section 271(f).

I. In *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972), this Court held that it was not an act of infringement to make the components of a patented invention in the United States and ship them abroad for final assembly. Congress responded to *Deepsouth* by enacting Section 271(f), which makes it an act of infringement to "suppl[y] . . . from the United States" the components of a patented invention in

a manner that induces the overseas combination of "such components." The "components" allegedly combined overseas in this case—the copies of Windows object code installed on and executed by foreign-built computers—were made in a foreign country; they were not supplied from the United States.

A. "Supply" means to "furnish or provide." The only things Microsoft furnishes from the United States are the golden master disks and encrypted transmissions containing master versions of the Windows object code. But those masters are never installed on a computer that is sold; rather, only the foreign-made *copies* of Windows are installed on foreign-built computers.

1. The Federal Circuit held that Microsoft had "supplie[d]" the "foreign-made copies" from the United States, reasoning that "for software 'components,' the act of copying is subsumed in the act of 'supplying.'" Pet. App. 6a. This is plainly wrong. "Supply" of "components" constitutes an act of infringement only when it induces the combination of "such components," *i.e.*, the same components "supplied," to form a patented invention. 35 U.S.C. § 271(f)(1); *see also id.* § 271(f)(2). Section 271(f) does not prohibit inducing the combination of *copies* of the components supplied from the United States.

Judge Rader, dissenting below, recognized that "[t]he act of supplying is separate and distinct from copying, reproducing, or manufacturing." The majority, however, was of the view that copying is "part and parcel of software distribution." It is, but copying is also inherent in distributing any other product, including the shrimp deveining machines at issue in *Deepsouth*. If a manufacturer exported a prototype shrimp deveining machine from which copies of the parts were made and assembled overseas, there would be no infringement under Section 271(f). And AT&T has conceded that "there is no indication that Congress meant to treat soft-

ware . . . any differently from any other components of patented inventions" for purposes of Section 271(f).

2. To win this case, AT&T must show that Section 271(f) requires treating software components differently from all other components. This it cannot do.

a. Software may refer to a computer program embodied in a computer-readable medium or to a computer program in the abstract. A computer program consists of the instructions that, when installed on a compatible computer, direct the computer to perform specified functions. These instructions are written in the binary language of computers, which can be transliterated as "1's" and "0's." Each digit instructs the computer to either open or close a switch. When a particular sequence of commands (a computer program) is installed on a computer-readable medium, such as a disk, the computer may execute the program to perform the desired function. A computer program is not functional unless it is embodied in a computer-readable medium.

b. AT&T stipulated that only *copies* of the Windows program are installed on the foreign-built computers at issue. But it claims that these copies were "supplie[d] . . . from the United States" because they contain the "very same zeros and ones created in the U.S. by Microsoft programmers." That position contravenes AT&T's own theory of liability, which seeks to hold Microsoft liable for each and every foreign-made computer running a foreign-made copy of Windows. Moreover, when a computer program is copied, a *new* sequence of digital information is physically scrivened onto the recipient hard drive or other medium. The content—the object code—may be identical to the master version, but it is not the same sequence any more than a machine part turned on a duplicating lathe is the same as the identical template from which it was produced.

B. Extending Section 271(f) to foreign-made copies of software components would transgress at least two principles of statutory construction.

1. In responding to *Deepsouth*, Congress sought to prohibit the domestic manufacture of component parts for assembly overseas. Because the copies at issue in this case were not manufactured in the United States, imposing infringement liability would frustrate rather than further the congressional objective in enacting Section 271(f). The Federal Circuit majority sought to justify its departure from the statutory text by pointing to "advances in a field of technology . . . that developed *after* the enactment" of the statute; but this Court has repeatedly emphasized that the Patent Act must be construed as enacted, leaving it to Congress to respond to changing circumstances. *E.g.*, *Parker* v. *Flook*, 437 U.S. 584 (1978); *Brown* v. *Duchesne*, 60 U.S. (19 How.) 183 (1857).

2. The presumption against extraterritoriality removes any possible doubt about the application of Section 271(f) to foreign-produced copies. The Court has repeatedly held that the Patent Act does not reach overseas conduct. *E.g.*, *Dowagiac Mfg. Co.* v. *Minn. Moline Plow Co.*, 235 U.S. 641 (1915). The Federal Circuit, however, impermissibly gave Section 271(f) extraterritorial effect by imposing infringement liability on conduct (the making of copies) that occurs entirely on foreign soil.

II. The parties stipulated below that the "components" in issue were the golden master disks and the encrypted transmissions containing master versions of the Windows object code. In this Court, AT&T contends that the relevant "component" is a "binary sequence of numbers that lacks physical existence." Neither articulation amounts to a "component" under the statute.

A. The golden master disks and encrypted transmissions are not components because they are never "combined" with

other components to practice the claimed invention. The parties stipulated that the master versions of the code conveyed by these media are never installed on a computer that is sold.

B. Although computer programs recorded on machine-readable media may be statutory components, the abstract instructions comprising such programs—a "binary sequence of numbers that lacks physical existence," in AT&T's formulation—cannot be a component of a patented invention within the meaning of Section 271(f).

1. Uncoupled from any computer-readable medium, the abstract sequence is nothing other than design information. When read and executed by a computer (from a computer-readable medium) the sequence can direct that computer to alter its circuitry to perform certain specialized functions, but standing alone, the sequence of numbers is nothing other than abstract instructions. Section 271(f) "refers to the physical supply of components, not simply to the supply of instructions." *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113, 1118 (Fed. Cir. 2004).

2. AT&T's theory that an abstract sequence can be a component cannot be reconciled with the statutory text, which requires that a component be capable of being "combined" with other components. Abstract information, floating in the ether, cannot be combined with anything. Nor can abstract information be exported or "supplied." Abstract information does not travel. Before information can move from one physical location to another, it must first be reduced to some physical medium, whether a sound wave, electromagnetic impulse, or a piece of paper.

ARGUMENT

Section 271(f) makes it an act of patent infringement to "suppl[y] . . . from the United States" a "component" of a patented invention with the intent that the component thus supplied be "combin[ed]" with other components overseas in a manner that would infringe had the combination occurred

in the United States. Analysis of claims under Section 271(f) thus requires both identifying the relevant components of the patented invention and determining whether the accused infringer supplied those components from the United States.[3]

The parties stipulated that Microsoft supplies from the United States "a limited number of 'golden master' disks . . . on which the machine-readable object code for the Windows operating system software is stored." Pet. App. 45a ¶ 4. "Microsoft also supplies its Windows operating system object code from the United States . . . by sending to [foreign manufacturers] a single encrypted transmission of the object code." *Id.* at 46a ¶ 7. The parties further stipulated "that, other than the 'golden master disks' and the encrypted transmissions of Windows object code, Microsoft does not supply any 'component' from the United States for assembly abroad." *Id.* at 47a ¶ 10.

The parties also stipulated that the master versions of the Windows object code embodied in the golden master disks and encrypted electronic transmissions are "never installed on a computer that is then sold." Pet. App. 45a ¶ 5. Rather, the foreign manufacturers use the master versions to "make

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[3] AT&T never clarified whether it was proceeding under Section 271(f)(1), Section 271(f)(2), or both, and the courts below held generically that Microsoft was liable under "Section 271(f)." *See, e.g.*, Pet. App. 11a ("[T]he judgment of the district court holding Microsoft liable under § 271(f) is affirmed"). Microsoft could possibly be liable only under Section 271(f)(1) because Windows is not "especially made or especially adapted for use in [AT&T's patented] invention," as 35 U.S.C. § 271(f)(2) requires. *See Aro Mfg. Co.* v. *Convertible Top Replacement Co.*, 377 U.S. 476, 488 n.7 (1964). In any event, the result would be the same under either provision because both include the same operative language—"component" and "supplie[d] . . . from the United States," and "[i]n granting certiorari, [this Court] necessarily considered and rejected" AT&T's belated invocation of Section 271(f)(2) "as a basis for denying review." *United States* v. *Williams*, 504 U.S. 36, 40 (1992).

. . . copies of the object code" and "install those copies onto computer hardware." *Id.* at 46a ¶ 9.

These stipulated facts, and the plain language of Section 271(f), establish that Microsoft has committed no act of infringement under that statute. The foreign-produced copies of the object code for the Windows operating system were not "supplie[d] . . . from the United States"—they were made overseas. And what Microsoft did supply—golden master disks and electronic transmissions conveying master versions of the Windows object code—are not "components" because the physical media were not, and the abstract information they conveyed could not be, "combined" overseas to practice the claimed invention.

I. Foreign-Made Copies Of The Object Code For The Windows Operating System Were Not "Supplie[d]" By Microsoft "From The United States"

In *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972), this Court held that a company was not liable for patent infringement under 35 U.S.C. § 271(a)—which prohibits "mak[ing] . . . a[] patented invention, within the United States," without authorization—where it manufactured all the component parts of a patented shrimp deveining machine in the United States and shipped those parts for final assembly abroad. 406 U.S. at 524. Because the final assembly occurred in a foreign country, the Court concluded that the defendant did not "make" the patented machine within the United States and therefore did not infringe the patent. *Id.* at 527. The Court emphasized the territorially limited nature of the U.S. patent laws, explaining that Section 271(a) "makes it clear that it is not an infringement to make or use a patented product outside of the United States." *Ibid.* Recognizing that its decision might be viewed as opening a loophole in the patent laws, the *Deepsouth* Court invited Congress to provide a "clear . . . indication of intent to extend the patent privi-

lege" to the export of components of a patented invention for assembly abroad. *Id.* at 532.

Congress responded to *Deepsouth* by enacting Section 271(f) as part of the Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 101, 98 Stat. 3383, 3383. *See* 130 Cong. Rec. H10,525 (Oct. 1, 1984) ("This proposal responds to the United States Supreme Court decision in [*Deepsouth*], concerning the need for a legislative solution to close a loophole in patent law"); S. Rep. No. 663, 98th Cong., 2d Sess. 2-3 (1984) (explaining that the "provision is a response to the Supreme Court's 1972 *Deepsouth* decision").

In order to prevent *Deepsouth*-like schemes from circumventing infringement liability, Section 271(f) makes it an act of infringement to "suppl[y] . . . from the United States" the "components of a patented invention" in a manner that induces the combination of "such components" abroad. As Congress's use of "such components" attests, liability attaches only where the defendant induces the overseas combination of the *same* components that it shipped from the United States. The copies of computer-readable object code for the Windows operating system that are installed on the foreign-assembled computers are made by foreign manufacturers, in foreign countries, and thus were not "supplie[d] . . . from the United States" within the meaning of Section 271(f).

A. The Plain Language Of Section 271(f) Does Not Encompass Foreign-Made Copies

As AT&T agrees (Second Supp. Cert. Br. 3), the ordinary meaning of the verb "supply" is "to furnish or provide." RANDOM HOUSE UNABRIDGED DICTIONARY 1912 (2d ed. 1993); *see also Asgrow Seed Co.* v. *Winterboer*, 513 U.S. 179, 187 (1995) (where Congress uses an undefined term, courts should afford the term its ordinary meaning). As this Court has explained in a different context, "to furnish means

to supply." *E.W. Bliss Co.* v. *United States*, 248 U.S. 37, 45 (1918). Thus, Microsoft cannot be held liable under Section 271(f) unless it induces foreign manufacturers to combine the same components that it furnishes from the United States to practice the patented invention. But the *only* things Microsoft furnishes from the United States are master versions of the object code for the Windows operating system (via golden master disk or encrypted transmission); and it is undisputed that those master versions are never installed on a computer that is then sold. Pet. App. 45a ¶ 5, 46a ¶ 7. Rather, foreign manufacturers use the master versions to produce *copies* of the object code that they then install on computer hardware and sell as part of completed computer systems to overseas end-users. *Id.* at 45a ¶ 5, 46a ¶ 7. These foreign-made copies were *not* furnished by Microsoft from the United States.

Just as supplying a product that can be used to produce copies is not the same thing as supplying the copies themselves, *see Sony Corp. of Am.* v. *Universal City Studios, Inc.*, 464 U.S. 417, 436 (1984), supplying a master template or prototype from which copies can be produced is not the same thing as actually supplying those copies. The fact that, today, computer programs can be duplicated with relative ease does not mean that, by encoding a computer program on a golden master disk and shipping that master version to foreign manufacturers who produce duplicate copies of the object code, Microsoft has done anything more than "suppl[y] . . . from the United States" the single master version of the object code—a master that "is never installed on a computer that is then sold." Pet. App. 45a ¶ 5. The copies of the object code that are installed on computers built overseas are themselves made overseas—they are not supplied from the United States. To be sure, those copies convey the same set of instructions as the master version; but they are different from the master, just as a machine part turned on a duplicating lathe is identical to but different from the

template. *See, e.g.*, Shopsmith Lathe Duplicator, *at* http://www.shopsmith.com/ownersite/catalog/latheduplicator.htm (last visited Dec. 4, 2006).

1. Judge Rader, in his dissent below, correctly understood that a copy made overseas is not supplied from the United States. As he explained, "[t]he ordinary meaning of 'supplies[]' . . . does not include 'copying,' 'replicating,' or 'reproducing'—in effect 'manufacturing.'" Pet. App. 12a. Rather, "[t]he act of supplying is separate and distinct from copying, reproducing, or manufacturing." *Ibid.* "As a matter of logic," he continued, "one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software." *Id.* at 13a. But foreign "manufacturers do not install the actual component 'supplied' from the U.S. (the master disc). Instead, they install a copy made [overseas]. Thus, . . . liability cannot attach under § 271(f) because the components actually assembled into the infringing products were never literally 'shipped from the United States.'" *Id.* at 15a-16a (quoting *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113, 1117 (Fed. Cir.), *cert. denied*, 543 U.S. 1003 (2004)).

The Federal Circuit majority recognized—as it had to—that Microsoft does not actually "suppl[y] . . . from the United States" the foreign-produced copies of Windows object code. Instead, the court of appeals majority was of the view that "such resulting copies have *essentially* been supplied from the United States." Pet. App. 7a (emphasis added). The Federal Circuit's use of the modifier "essentially" is an acknowledgment that Microsoft does not *actually* supply the copies from the United States. *See also id.* at 4a ("software replicated abroad from a master version exported from the United States . . . may be *deemed* 'supplied' from the United States") (emphasis added). But Congress used no such modifiers; the statute as enacted applies only to the act of actually supplying a component from the United States.

See Rodriguez v. *Compass Shipping Co.*, 451 U.S. 596, 617 (1981) ("As with other problems of interpreting the intent of Congress in fashioning various details of [a] legislative compromise, the wisest course is to adhere closely to what Congress has written"). And the court of appeals' efforts to justify its departure from the plain language of the statute are sorely lacking.

The Federal Circuit first asserted that "the 'supplying' of software commonly involves generating a copy" and that "[c]opying . . . is part and parcel of software distribution." Pet. App. 6a. Of course, software producers and content providers go to great lengths to prevent unauthorized duplication of their products. *Cf. Metro-Goldwyn-Mayer Studios Inc.* v. *Grokster, Ltd.*, 545 U.S. 913 (2005). And although *authorized* copying is inherent in the distribution of software, *any* business that derives profit from the sale of multiple identical products is dependent on the "copying" of the products' components. The pharmaceutical industry, for example, is based on the mass production of identical copies of compounds, many of them patented. Indeed, the manufacturer in *Deepsouth* was engaged in supplying *copies* of the components for shrimp deveining machines. The key question under Section 271(f) cannot be whether a copy is involved in the alleged infringement; in the case of volume sellers, the allegedly infringing product almost always will include copied components. Rather, the question must be *where* the copying takes place. If the accused infringer copies a component in the United States and exports those copies for inclusion into foreign products, then liability may attach; but if the accused infringer sends abroad a master version of the component that itself is never combined into a patented invention but instead is copied, then there is no liability under Section 271(f).

The court of appeals also opined that "[i]t is inherent in the nature of software that one can supply only a single disk that may be replicated—saving material, shipping, and stor-

age costs—instead of supplying a separate disk for each copy of the software to be sold abroad." Pet. App. 7a. But it is equally inherent in the nature of shrimp deveining machines that a domestic company can save "material, shipping, and storage costs" by sending a master version of the machine's components abroad for foreign replication. Conversely, a domestic company that, like the accused infringer in *Deepsouth*, chooses to make multiple copies of components in the United States and then export them will incur the costs of so doing. As Judge Rader recognized, "[t]he only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport"; but this "is not the proper basis for making distinctions under § 271(f)." *Id.* at 14a. Incurring costs such as those for materials, shipping, and storage is inherent in the act of "supply." The Federal Circuit's acknowledgment that Microsoft saves such costs by sending only a master version abroad for replication compels the conclusion that there has been no "supply."

It is both incorrect and insufficient to say, as the Federal Circuit did, that "for software 'components,' the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." Pet. App. 6a. That *ipse dixit* simply assumes the answer to the first question presented and reads out of the statute the language providing that liability for "suppl[ying]" the components of a patented invention "from the United States" can attach only where "such components"—that is, the same components that are "supplie[d] ... from the United States"—are combined or intended to be combined overseas. The Federal Circuit's flawed reasoning also impermissibly

treats software products differently from all other products that might be subject to Section 271(f).[4]

A simple example illustrates the absurdity of the Federal Circuit's approach. Suppose that a domestic manufacturer sends a single shrimp deveining machine to its counterpart in a foreign city. The foreign manufacturer then disassembles the machine, creates a series of dies or molds, and copies each of the components of the machine. The foreign manufacturer then assembles 100 machines entirely from the foreign-made copies, and sells them to foreign buyers. Would the domestic manufacturer have "supplie[d] . . . from the United States" the components of 100 shrimp deveining machines? Of course not. Similarly, suppose that the domestic manufacturer ships abroad the dies and molds, from which the foreign manufacturer makes copies of all the parts. The domestic manufacturer would not have "supplie[d] . . . from the United States" each machine assembled from those foreign-made parts. Finally, suppose that the domestic manufacturer, rather than sending the actual machine, sends the blueprints or design specifications for each of the parts to his foreign counterpart. If the foreign manufacturer uses the plans to make copies of all the parts, then assembles and sells machines abroad, the domestic manufacturer certainly has not "supplie[d] . . . from the United States" those foreign-assembled machines.

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[4] The copyright laws demonstrate that the Federal Circuit was wrong to conclude that the supply of an original subsumes all subsequently made copies. Creators of computer programs have a number of exclusive rights, including the right to prevent copying. 17 U.S.C. § 103. The copyright laws place specific, narrowly tailored limitations on these exclusive rights, including by granting the owner of a copy of a computer program the express authority to make additional copies in the installation process or as backups. *Id.* § 117(a). If copying were truly a legally irrelevant activity subsumed in the act of supplying, these statutory exceptions to copyright holders' exclusive rights would be unnecessary.

AT&T has conceded that "there is absolutely no indication that Congress meant to treat software . . . any differently from any other components of patented inventions" for purposes of Section 271(f). Second Supp. Cert. Br. 4; *cf.* TRIPS Agreement pt. II, § 5 (1994) (requiring signatories to "accord the same treatment to all forms of invention"). If foreign-made copies of the components of a shrimp deveining machine would not lead to infringement liability because the copies are not supplied from the United States, as they obviously would not, then neither can a foreign-made copy of the object code for the Windows operating system serve as the predicate for a Section 271(f) violation. The Federal Circuit's contrary conclusion, if sustained, would subject software producers to a different, and far more unfavorable, regime than applies to every other domestic business. Thus, while AT&T criticizes Microsoft (and the United States) for supposedly advocating a "software exception" to Section 271(f) (Second Supp. Cert. Br. 4), it is AT&T's position that would put software engineers on unequal footing.

2. To win this case, AT&T must show that Section 271(f) as enacted by Congress requires treating software differently from the components of a shrimp deveining machine, such that foreign-made copies of the former can somehow trigger liability while foreign-made copies of the latter obviously cannot. This AT&T cannot do.

a. "Software" is a term frequently used but imperfectly understood. It is common ground that software includes "[t]he programs used to direct the operation of a computer." RANDOM HOUSE UNABRIDGED DICTIONARY 1814; *see also* MICROSOFT COMPUTER DICTIONARY 489 (5th ed. 2002) (defining "software" as a "[c]omputer program[]; instructions that make hardware work"). A computer program is a "set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. § 101; *see also, e.g.*, *Fantasy Sports Props., Inc.* v. *Sportsline.com, Inc.*, 287 F.3d 1108, 1118 (Fed. Cir. 2002) (a com-

puter program is "a set of instructions, known as code, that directs a computer to perform specified functions or operations"); UNITED STATES PATENT & TRADEMARK OFFICE, MANUAL OF PATENT EXAMINATION PROCEDURE § 2106.01(I)(a) (rev. 8th ed. 2006) ("a computer program is merely a set of instructions capable of being executed by a computer").

The ultimate goal of a computer program is to instruct the computer to perform a desired function. The programmers of the earliest computers had to physically rewire the machine to perform each new function.[5] Today's computer programs instruct the computer to rewire itself. Such programs are originally written as "source code"—human-readable commands to the computer—in a programming language such as BASIC, FORTRAN, or C++. *See Gates Rubber Co.* v. *Bando Chem. Indus., Ltd.*, 9 F.3d 823, 835 (10th Cir. 1993); *see also* '580 patent, apps. A-D (Supp. J.A. 12-15) (FORTRAN source code for computer program that causes a computer to perform speech coding functions). To make the instructions executable by a computer, source code is run through a "compiler" that translates the human-readable source code into computer-readable "object code," which is expressed in the digital binary language that can be transliterated as "1's" and "0's." Each digit represents an instruction to the computer's processor to open or close one of its millions of switches. The object code is thus a set of instructions for aligning a computer's circuits in a particular manner to achieve a particular functionality.

Antique player pianos employ technology comparable to rudimentary software technology. A music roll for a player piano has 88 columns—one for each of the 88 keys on a pi-

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[5] To program ENIAC—a 30-ton computer built for the U.S. Army in 1943—technicians had to manually wire a series of switches in a precise arrangement. It took two days to set up a program ENIAC could execute in approximately two seconds. WHITE, *supra*, at 6.

ano. A perforation in a particular column causes the player piano to depress the corresponding key and strike the corresponding strings. *See generally White-Smith Music Publ'g Co.* v. *Apollo Co.*, 209 U.S. 1, 9-10 (1908) (copyright case describing the mechanics of a player piano). The player piano roll is software for player piano hardware; it is a set of instructions, readable and executable by the hardware, to perform a certain function—the physical production of a piece of music. Technicians transcribed musical compositions into the machine-readable piano roll format—*i.e.*, wrote the software—either by reading sheet music and manually punching holes into a master template, or playing the composition on a piano modified with a device that produced a perforated matrix from which a master template could be made. *Id.* at 10-11 ("persons skilled in the art can take such pieces of sheet music in staff notation, and by means of the proper instruments make drawings indicating the perforations, which are afterwards outlined and cut upon the rolls in such wise as to reproduce, with the aid of the other mechanism, the music which is recorded in the copyrighted sheets").

Analytically similar punch-card technology also played an important role in the history of computing. At its core, a computer is simply a conglomeration of on/off switches. *See* RON WHITE, HOW COMPUTERS WORK 53 (8th ed. 2006) ("The easiest way to visualize how computers work is to think of them as enormous collections of switches"). The once-ubiquitous 80-column cards pioneered by IBM contained series of "punches" that, read by a computer in sequence, instructed the computer's processor either to keep its switches in their existing state (no punch) or to change state (punch). *See* Dale Fisk, Programming with Punched Cards 1 (2005), *at* http://www.columbia.edu/acis/history/fisk.pdf. "[T]he punch cards [we]re fed into the computer, the information contained thereon [wa]s recorded in the inner operations of the machine; at the completion of the process the computer [wa]s programmed." *District of Columbia* v. *Uni-*

versal Computer Assocs., Inc., 465 F.2d 615, 617 (D.C. Cir. 1972).

Although the technology has advanced, the methodology fundamentally remains the same. Rather than holes in punch cards, CDs and DVDs store the commands to open or close a computer's internal switches in the form of a series of pits (indentations) and lands (the areas between the pits); hard drives store those commands by aligning pairs of bands of magnetically charged particles in either the same or opposite polarity. WHITE, *supra*, at 144-45. Each pit and land on a CD-ROM, and each pair of magnetically charged bands on a hard drive, represents a bit—in the binary digital language of computers, a "1" or a "0". Different patterns of bits correspond to different commands to the machine. The instructions embodied in the pits and lands of a CD-ROM or the magnetically charged particles on a hard disk platter (software) control the operations of the computer (hardware) by directing switches to open or close. It is the "opening and closing of the interconnected switches" that "creates electrical paths . . . that cause [the computer] to perform the desired function." *WMS Gaming Inc.* v. *Int'l Game Tech.*, 184 F.3d 1339, 1348 n.3 (Fed. Cir. 1999). Today's personal computers possess microprocessors—less than a square centimeter in size—that contain more than 150 million switches and can perform up to two billion operations per second.

b. The stipulation that AT&T signed in this case clearly states that foreign manufacturers "*make . . . copies* of the object code for the Windows operating system (created from the golden master disks and/or electronically transmitted software code)" and "install *those copies* onto computer hardware." Pet. App. 46a ¶ 9 (emphases added). AT&T has argued that the copies of Windows at issue in this case, while concededly made in a foreign country, are "nevertheless supplied from the United States" because "[t]he very same zeros and ones created in the U.S. by Microsoft programmers are

installed on the foreign computers." Br. in Opp. to Pet. for Cert. 17-18. That formulation misstates the issue in this case.

AT&T's position that the copies are the "very same" as the master contravenes AT&T's own theory of liability. AT&T disregards the fact that it is attempting to hold Microsoft liable for each device that practices its patented invention—*i.e.*, for each foreign-made computer on which a foreign-made copy of Windows has been installed. Because AT&T is seeking to premise Section 271(f) liability on each of those physical embodiments of the code, AT&T is wrong to assert that the "issue is not whether Microsoft supplied each of the individual physical containers in which that code is stored." Second Supp. Cert. Br. 4 (emphasis omitted). That is *precisely* the issue in this case. If it were not, Microsoft would be liable, at most, for a single act of infringement for each master version shipped overseas, rather than being confronted with the prospect of staggering liability for each of the tens of millions of foreign-produced copies.

Moreover, AT&T's contention that the copies contain the "very same" 1's and 0's as the master contradicts the laws of physics. Neither the golden master disks nor the encrypted transmissions contain any 1's and 0's at all. Rather, they contain pits and lands (on the disk) or electromagnetic impulses (in the transmission) describing a binary sequence that can be transliterated as 1's and 0's. When the sequence is copied, a *new* sequence of binary instructions is physically scrivened into the recipient storage medium. The object code is virtually identical to that found on the master version; but it is not the "very same" as the master. The golden master disks and electronic transmissions are analogous to the "glass master" disks commonly used in the replication of CDs and DVDs. In the process of glass mastering, the manufacturer creates a template that is the physical inverse of the CD or DVD; where the original CD has pits, the glass master has lands. The glass master disk is then used to stamp out physical inversions of itself, which is to say, copies of the original.

See Optical Disc Corp. v. *Del Mar Avionics*, 208 F.3d 1324, 1325-26 (Fed. Cir. 2000). While they are identical, they are not the "very same." That foreign manufacturers copy the object code digitally rather than mechanically (as it would have been if Microsoft shipped glass master disks rather than golden master disks) is irrelevant.

Indeed, when object code is copied from a CD-ROM and installed on a foreign computer's hard drive, the resulting copy is not the "same" as the master at all; it is physically different and obviously so. On a CD-ROM, the computer program instructions are encoded in the form of pits and lands; on the surface of a hard disk platter in a hard drive, the instructions are embodied in the form of pairs of bands of iron particles that are aligned in the same (for 0's) or opposite (for 1's) polarity. *See* WHITE, *supra*, at 144-45, 172-73.

The flaws in AT&T's analysis are evident when one considers the identical question in the context of yesterday's technology. Suppose Microsoft compiled the object code for Windows and stored it, not on CDs or other modern media, but on 80-column IBM punch cards. The resultant deck of object cards could be run through a computer (equipped with a suitable card reader) to, *inter alia*, practice AT&T's claimed invention. If Microsoft shipped the object deck to a foreign manufacturer, who in turn made 100 copies of the object deck and bundled those copies with 100 foreign-made computers for sale to 100 foreign end-users, would Microsoft have committed 100 acts of infringement under Section 271(f)? The answer is clearly no, because the copies were not supplied from the United States; and the same answer holds if the object code is transmitted via golden master disk or electronic transmission.

Indeed, it would be possible (although far from practical) to write out the object code for Windows longhand, as a literal series of 1's and 0's. Suppose Microsoft were to do so, and then ship the stack of paper to a foreign manufacturer,

who in turn enters each digit manually into a computer that produces disks containing machine-readable copies of the code. Under AT&T's theory, because each disk contains the "very same 1s and 0s" as the original manuscript, the domestic author has "supplied" each copy from the United States. But neither law nor logic will support such a conclusion. And if the theory does not hold for the manuscript original, it equally cannot hold for the originals transmitted via golden master disk or electronic transmission.[6]

"[W]here, as here, the statute's language is plain, the sole function of the courts is to enforce it according to its terms." *United States* v. *Ron Pair Enters., Inc.*, 489 U.S. 235, 241 (1989) (internal quotation marks omitted). The language of Section 271(f) is very clear: It imposes infringement liability only on those who "supply or cause to be supplied in or from the United States" the component of a patented invention. Microsoft has supplied no such component: The copies of Windows at issue were made in foreign countries, not supplied from the United States. Enforcing the statute according to its terms requires reversal of the decision below.

B. Traditional Principles Of Statutory Construction Prohibit The Extension Of Section 271(f) To Foreign-Made Copies

1. The expansive reading of Section 271(f) urged by AT&T and accepted by the Federal Circuit majority turns a blind eye to the objectives that Congress sought to accomplish when enacting that provision, and would (if accepted)

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[6] Of course, the manuscript and the punch cards in these examples—like any other recordation of the Windows object code, including the golden master disks—would be protected by the copyright laws. *See, e.g., Lexmark Int'l, Inc.* v. *Static Control Components, Inc.*, 387 F.3d 522, 533 (6th Cir. 2004). The legality of extraterritorial copying under those laws is not at issue in this case.

constitute a judicial arrogation of authority properly reserved to Congress.

In order to close the patent-law "loophole" identified by the Court in *Deepsouth*, Section 271(f) imposes a narrow limitation on the right of American companies to compete overseas with U.S. patent holders by supplying components from the United States. Under Section 271(f), "a product's patent cannot be avoided through the *manufacture of component parts within the United States* for assembly outside the United States." 130 Cong. Rec. H12,231 (Oct. 11, 1984) (statement of Rep. Kastenmeier) (emphasis added). Because the foreign-duplicated copies of Windows object code are not "manufacture[d] . . . within the United States," they do not fall within the ambit of Section 271(f).

Section 271(f) was not designed to prohibit a U.S. company from exporting a single master version of a component of a patented invention even if a foreign manufacturer made copies of that component for final assembly outside of the United States. Congress did not intend, for example, to prohibit the defendant in *Deepsouth* from supplying templates or prototypes that would allow the duplication of component parts of a shrimp deveining machine in foreign countries. If it had intended to reach such conduct, Congress could have added language to Section 271(f) declaring it an act of infringement to "make a component of a patented invention outside of the United States," or to "suppl[y] from the United States" the design specifications required to make the copies overseas. In combination with the enacted text of Section 271(f), such language would have facilitated the imposition of liability whenever an unauthorized component of a patented invention—manufactured overseas or in the United States—could be traced back to a U.S. company. The absence of such language is fatal to AT&T's case.

In holding that Section 271(f) applies to foreign-manufactured copies of object code, the Federal Circuit ac-

knowledged that it was seeking to account for "advances in a field of technology . . . that developed *after* the enactment of § 271(f)." Pet. App. 10a (emphasis added); *see also ibid.* ("Section 271(f), if it is to remain effective, must therefore be interpreted in a manner that is appropriate to the nature of the technology at issue"). The Federal Circuit attempted to justify its rewriting of the statute by speculating that "[t]o decide otherwise would emasculate § 271(f) for software inventions." *Id.* at 6a n.2. But Congress is well aware that copies as well as originals may be supplied and that the copying of various products other than software—including pharmaceuticals—can be accomplished with relative ease. Congress has expressly specified where it intends a statute to reach the supply of such copies. *See, e.g.*, 35 U.S.C. § 12 ("The Director may supply copies of specifications and drawings of patents and published applications for patents in printed or electronic form to public libraries in the United States which shall maintain such copies for the use of the public"). In Section 271(f), however, Congress made no mention of copies; rather, it prohibited the supply of "components" where "such components"—that is, the originals—may be combined overseas.

Moreover, the Federal Circuit is wrong to suggest that the adoption of Microsoft's arguments would exempt all software inventions from the scope of Section 271(f). U.S. companies distribute software to foreign markets in a number of different ways, many of which could implicate Section 271(f). For example, while Section 271(f) does not reach *foreign*-produced copies of object code duplicated from a U.S.-designed original, it would likely apply to a U.S. company that exported *domestically* produced software-encoded disks or microchips intending that foreign manufacturers or users incorporate those same disks or microchips into a computer system. Under such a distribution model, the software company might have induced the overseas combination of a component it "supplie[d] . . . from the United States." The

Federal Circuit's concerns about the "emasculat[ion]" of Section 271(f) are therefore decidedly ill-founded.

When the Federal Circuit took it upon itself to ensure that Section 271(f) "remain[s] effective," Pet. App. 10a, it arrogated to itself a legislative role that properly rests with Congress. Indeed, this Court has expressly rejected judicial efforts to rewrite the text of existing patent laws to cover technologies not expressly regulated by Congress. "It is our duty to construe the patent statutes *as they now read*, in light of our prior precedents, and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress." *Parker* v. *Flook*, 437 U.S. 584, 596 (1978) (emphasis added); *see also id.* at 595 ("Difficult questions of policy concerning the kinds of programs that may be appropriate for patent protection and the form and duration of such protection can be answered by Congress on the basis of current empirical data not equally available to this tribunal") (footnote omitted); *Brown* v. *Duchesne*, 60 U.S. (19 How.) 183, 197 (1857) (patent laws "should not be strained by technical constructions to reach cases which Congress evidently could not have contemplated").

This case provides the ideal vehicle to remind the Federal Circuit that it is not the Judiciary but Congress that is the appropriate branch of the federal government to decide whether existing laws should be modified to take account of technological changes. *See Deepsouth*, 406 U.S. at 530.[7] Unless and until Congress amends the existing patent laws, courts must treat software products like any other products of manufacture. If copies are made in and exported from the United States, they may be subject to Section 271(f); if they are made overseas, they are not. That simple principle,

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[7] In this regard, it is telling that Congress is currently considering a bill to *repeal*—not expand—Section 271(f). *See* Patent Reform Act of 2006, S. 3818, 109th Cong. § 5(f) (2006).

which follows from the plain language of the statute, is all that is necessary to decide this case.

2. Any conceivable doubt about whether Section 271(f) reaches foreign-manufactured components is completely dispelled by the presumption against the extraterritorial application of U.S. law.

It is a "longstanding principle of American law that legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States." *EEOC* v. *Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) (internal quotation marks omitted). This presumption against extraterritoriality is grounded in comity considerations and "serves to protect against unintended clashes between our laws and those of other nations which could result in international discord." *Ibid.* The presumption also reflects the fact that the legislative and executive branches are far better equipped than the judiciary to evaluate the complex foreign policy considerations raised by the extraterritorial application of U.S. law. Indeed, decisions affecting international relations are "of a kind for which the Judiciary has neither aptitude, facilities nor responsibility." *Chicago & S. Air Lines, Inc.* v. *Waterman S.S. Corp.*, 333 U.S. 103, 111 (1948).

Because of these comity considerations and separation-of-powers concerns, courts will not construe a U.S. law as encompassing foreign conduct "unless ... the affirmative intention of the Congress" to apply a law extraterritorially is "clearly expressed" in the statutory language. *Arabian Am. Oil Co.*, 499 U.S. at 248 (internal quotation marks omitted). Indeed, even if the more natural reading of the statute encompasses foreign activity, as long as "the statute's language reasonably permits an interpretation consistent with" the general presumption that Congress seeks to avoid interference with other nations' sovereignty, a court "should adopt

it." *F. Hoffman-La Roche Ltd.* v. *Empagran S.A.*, 542 U.S. 155, 174 (2004).

The presumption against the extraterritorial application of U.S. law is especially strong in the patent context because the application of U.S. patent law to foreign commercial activity intrudes upon other nations' intellectual property law systems and thereby creates a significant risk of international discord. This Court has thus long recognized that U.S. patent laws generally are "not intended to[] operate beyond the limits of the United States." *Brown*, 60 U.S. (19 How.) at 195; *see also* 35 U.S.C. § 154(a)(1) ("Every patent shall . . . grant to the patentee . . . the right to exclude others from making . . . or selling the invention *throughout the United States*") (emphasis added); *id.* § 271(a) ("whoever without authority makes, uses, offers to sell, or sells any patented invention, *within the United States*, . . . infringes the patent") (emphasis added). Indeed, this Court has recognized that, because U.S. patent law is territorially limited, it does not prohibit a patentee's competitors, in overseas markets, from duplicating or reverse-engineering inventions patented in the United States, or assembling such inventions from foreign-manufactured component parts. *See Dowagiac Mfg. Co.* v. *Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915) (concluding that a defendant could not be held liable under U.S. law for making unauthorized sales of patented inventions in Canada).[8]

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[8] Although U.S. law does not protect U.S. patent holders from overseas activities, they are not without recourse against foreign competition. U.S. patent holders are able to seek protection for their intellectual property under foreign patent law and to invoke these foreign legal remedies in response to foreign acts of infringement. The Federal Circuit expressly stated that it would take no account of foreign patent laws. Pet. App. 6a-7a n.2. But AT&T holds patents on its Digital Speech Coder in Canada, France, Germany, Great Britain, Japan, and Sweden. C.A. J.A. 1477. Extending Section 271(f) to reach foreign-produced copies of the Windows operating system would not only displace the infringement remedies that AT&T may have under those countries' laws, but create the sub-

AT&T has maintained that the presumption against extraterritoriality should not be applied here because Section 271(f) "was enacted for the *sole and express purpose* of addressing the interplay between U.S. and foreign law." Second Supp. Cert. Br. 6. But in so doing, Congress did *not* mark out an exception to the territorial limitations of the Patent Act. To the contrary, in responding to *Deepsouth*, Congress expanded the scope of infringing acts to include additional activity that occurs entirely *within the United States*—that is, "suppl[ying] or caus[ing] to be supplied *in or from* the United States." 35 U.S.C. § 271(f)(1) (emphasis added). The prohibited activity—supplying components "in or from" this country—is entirely domestic; Section 271(f) as enacted by Congress thus has no extraterritorial effect. *Waymark Corp.* v. *Porta Sys. Corp.*, 245 F.3d 1364, 1368 (Fed. Cir. 2001).

The Federal Circuit's decision in this case, however, would impermissibly give Section 271(f) extraterritorial effect by extending infringement liability to conduct—the making of copies overseas—that occurs entirely on foreign soil. Pet. App. 12a (Rader, J., dissenting). Section 271(f) prohibits its domestic companies from inducing foreigners to assemble infringing devices (by "combin[ing]" "components" shipped from the United States); it does not prohibit a domestic company from inducing the manufacture of components overseas. Thus, there is an important difference between engineering and manufacturing. Microsoft's engineers design computer programs in the United States; but Microsoft relies on other companies, both domestic and foreign, to manufacture the

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stantial risk of overlapping and duplicative liability for the same conduct. In contravention of the firm territorial restrictions on U.S. patent law, the Federal Circuit's approach would effectively transform the Patent Act into a supranational body of intellectual property law. *See* Pet. App. 18a (Rader, J., dissenting).

physical media by which Microsoft software is delivered to end-users. Where, as here, the copies are made in a foreign country, imposing infringement liability for that overseas activity would be an extraterritorial application of the statute. It therefore runs counter to the rule that the statute should be construed to *avoid* such extraterritorial application. *Empagran S.A.*, 542 U.S. at 174.

AT&T has responded that "Microsoft has been held liable not for conduct performed abroad, but for conduct performed in the United States with the knowledge that the conduct may have particular consequences abroad." Second Supp. Cert. Br. 5. To be sure, Microsoft knows that foreign manufacturers will use the golden master disks and encrypted transmissions to make copies of the Windows object code; but those copies are made overseas. Section 271(f) does *not* make it an act of infringement to make overseas copies (or assemble devices overseas). Rather, the infringing act is supplying components from the United States. The "conduct performed [by Microsoft] in the United States" did not include supplying foreign-manufactured components; the Federal Circuit's contrary conclusion transgresses the presumption against extraterritoriality.

II. What Microsoft Did Supply From The United States Were Not Components Of A Patented Invention Combined Abroad

Rather than the "machine-readable object code" that the parties stipulated was the applicable "component" in this case—or, as AT&T put it in its brief to the Federal Circuit, "the actual object code that causes the computers to operate," the "functional, operational, useful and patentable software," Resp. C.A. Br. 13, 35 (emphasis omitted)—AT&T now asserts that it is the computer programming instructions themselves, in the abstract—"intangible 1s and 0s," "a binary sequence of numbers that 'lacks physical existence'"—that is the "'component' at issue." Second Supp. Cert. Br. 1, 4.

This duck-and-dodge tactic fails here for two reasons: First, whatever its briefs might next assert is the "'component' at issue," AT&T is bound by the facts to which the parties stipulated below. There, AT&T "agree[d] that, other than the 'golden master disks' and the encrypted transmissions of Windows object code, Microsoft does not supply any 'component' from the United States for assembly abroad." Pet. App. 47a ¶ 10. But even if this Court could disregard those stipulated facts—and clearly, it cannot—the abstract "sequence of numbers" AT&T now claims is "at issue" is neither a component of AT&T's patented invention, nor could it be under Section 271(f).

A. Under The Parties' Stipulation, The Physical Media At Issue In This Case Are Not "Components" Of A Patented Invention

In the district court, the parties framed the second question presented thusly: "AT&T alleges, and Microsoft disputes, that the 'golden master disks' and the encrypted transmissions of Windows object code constitute 'components' within the meaning of 35 U.S.C. 271(f)." Pet. App. 46a ¶ 10. The parties further "agree[d] that, other than the 'golden master disks' and the encrypted transmissions of Windows object code, Microsoft does not supply *any* 'component' from the United States for assembly abroad." *Id.* at 47a ¶ 10 (emphasis added).

Thus, to resolve this case, the Court need not decide whether software can *ever* be a "component of a patented invention" within the meaning of Section 271(f).[9] The Court

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[9] Microsoft does *not* contend that "software" can *never* be a component of a patented invention. In fact, Microsoft agrees with the United States (U.S. Cert. Br. 8) that physical media containing the machine-readable object code, combined with a general purpose computer to perform the functions of a special purpose speech coding device, could constitute a component of AT&T's Digital Speech Coder invention. *See also* Resp. C.A. Br. 28. The Microsoft patents to which AT&T has pointed

need only decide the much narrower question whether the two things that Microsoft actually supplied from the United States—the golden master disks and the encrypted electronic transmissions—constitute "components" of the foreign-assembled computers that allegedly infringe upon AT&T's patented speech coder invention. *That* question must be answered in the negative.

Liability attaches under Section 271(f) where a person supplies the "components of a patented invention" from the United States and "induce[s] the combination of such components" in a manner that would infringe a U.S. patent if done domestically. 35 U.S.C. § 271(f)(1); *see also id.* § 271(f)(2) (the defendant must "intend[] that such component will be combined"). A "component" is "a constituent part" or "ingredient" of something else. RANDOM HOUSE UNABRIDGED DICTIONARY 419. It is undisputed, however, that neither the golden master disks nor the master code they contain was ever installed on a computer that was sold. Indeed, the parties stipulated that they were not. Pet. App. 45a ¶ 5. Likewise, neither the electronic transmissions nor the machine-readable code they store was ever installed on a computer that was sold. *See id.* at 46a ¶ 7. Only foreign-made "*copies*" of the object code for the Windows operating system were installed on the foreign computers. *Id.* at 46a ¶¶ 7, 9. Of course, as discussed above, those foreign-made copies are not "supplie[d] . . . from the United States."

Under these stipulated facts, the golden master disks and electronic transmissions themselves—the only alleged "components" at issue under the stipulation in this case—cannot be "components of a patented invention" under Section

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(Br. in Opp. to Pet. for Cert. 14) refer to "software components" in precisely that sense. *See* Supp. J.A. 29, 50, 62. No such component, however, is supplied by Microsoft from the United States on the stipulated facts of this case.

271(f) because they were never (and were never intended to be) "combin[ed]" with other components in a manner that infringes upon AT&T's patent. The disks and transmissions were never integrated (or intended to be integrated) into the foreign-assembled computers that allegedly infringe AT&T's patent and therefore are not "constituent parts" of those computers. Just as a mold or die used to produce copies of one of the parts of a shrimp deveining machine would not be a "component"—a constituent part—of the assembled machines, the master disks used to produce copies of Microsoft's Windows software—whether glass or "golden"—are not components of the computers onto which those copies are installed. They are templates that are themselves never intended to be combined in a computer apparatus, and thus cannot be "components of a patented invention" within the meaning of Section 271(f).[10]

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[10] That design templates are not statutory components is confirmed by the legislative history of Section 271(f). Congress explained that Section 271(f) was a response to this Court's *Deepsouth* decision that "prevent[s] copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the *assembly* of the components may be completed abroad." 130 Cong. Rec. H10,525 (Oct. 1, 1984) (emphasis added); 130 Cong. Rec. H12,231 (Oct. 11, 1984) (statement of Rep. Kastenmeier) ("a product's patent cannot be avoided through the manufacture of component parts within the United States for *assembly* outside the United States") (emphasis added). The legislative history's emphasis on the "assembly" of components and on *Deepsouth* indicates that Congress was concerned with the specific facts of *Deepsouth* when enacting Section 271(f)—the shipment overseas of the constituent parts of an invention and the final assembly of those same constituent parts overseas—not with the export of templates used by foreign companies to manufacture an invention's parts.

B. A "Binary Sequence Of Numbers That Lacks Physical Existence" Cannot Be A "Component Of A Patented Invention" Under Section 271(f)

Apparently recognizing that the golden master disks and the encrypted transmissions are not "components of a patented invention," AT&T argues in this Court that the *information* conveyed via those media—"the Windows object code, a binary sequence of numbers that 'lacks physical existence'"—is the relevant "component." Second Supp. Cert. Br. 4. This argument contravenes the stipulation that AT&T signed in the district court, which unequivocally states that "other than the 'golden master disks' and the encrypted transmissions . . . Microsoft does not supply any 'component.'" Pet. App. 47a ¶ 10. It is also an about-face from the position that AT&T took in the court of appeals, where it *disclaimed* any contention that "Microsoft's provision of 'information,'" or "product designs," constituted an infringing act under Section 271(f). Resp. C.A. Br. 12-13, 34-35; *see also* Br. in Opp. to Pet. for Cert. 16 (arguing that "software is not 'information'").

Microsoft agrees with the United States that the computer-readable and -executable "software copy that is actually loaded onto [a] computer[]" may be a "component of a patented invention" under Section 271(f). U.S. Cert. Br. 8; *see* note 9, *supra*. Indeed, Microsoft acknowledged in the district court that the exportation of individual copies of physical media containing computer programs to be executed on a foreign-manufactured computer (as opposed to a single golden master disk) might give rise to liability under Section 271(f). J.A. 26; *see also* Cert. Reply Br. 7 n.4.[11]

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[11] For such liability to attach, the exporter would have to intend or expect that the end-user would run the computer program directly from the U.S.-supplied disk, rather than from a copy made in a foreign country. *See* note 2, *supra*. For example, many video game systems require that

Contrary to AT&T's latest theory, however, a "binary sequence of numbers that 'lacks physical existence'" is *not* a "component" under the statute, for two related reasons. *First*, such a digital sequence is design information, analogous to product specifications, or a recipe; while that information can be used to *make* products, machines, or speech coding devices (and is so used by foreign manufacturers), the design information is not itself a component of the manufactured device. *Second*, a digital sequence "that 'lacks physical existence'" is incapable of being "combined" with other components (*e.g.*, a general purpose computer, a microphone, and a speaker) to practice the invention. Such a digital sequence can direct a general purpose computer to function as the device claimed in the patent only when it is readable and executable by a computer. A digital sequence that exists only in the ether is neither.

1. Uncoupled from any computer-readable medium, object code—what AT&T now calls a "binary sequence of numbers that 'lacks physical existence'"—is simply design information. It is a set of instructions directing the computer's microprocessor to open or close one of its millions of switches and align its circuits in a particular manner. Object code thus can instruct a general purpose computer to alter its circuitry to become a special purpose computer (including a digital speech coder device). *See In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994) (en banc).

What differentiates object code from other types of design information is that object code is readable and executable by a computer. But stripped of that key characteristic—as an abstract "binary sequence of numbers" most surely is—object code is just instructions for doing something, no dif-

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the disk containing the game be physically present in the machine for the program to run.

ferent from the design instructions one may glean from blueprints, recipes, computer program listings, and patents. Those instructions are not "components" of the finished products to which they pertain.

Section 271(f) applies in the situation where "everything was accomplished in this country except putting the pieces together as directed." *Deepsouth*, 406 U.S. at 533 (Blackmun, J., dissenting). Congress specifically addressed the "pieces" (components); but it did not prohibit the supply of "direct[ions]." Thus, if a manufacturer sends abroad all of the parts of a shrimp deveining machine with assembly instructions, it has violated Section 271(f); but if the manufacturer sends to its foreign counterparts *only* the instructions, with the expectation that the parts will be produced and assembled abroad, there is no infringement. *Pellegrini*, 375 F.3d at 1118.

In *Pellegrini*, the Federal Circuit correctly held that a domestic manufacturer was not liable under Section 271(f) for sending foreign manufacturers the design specifications for an allegedly infringing circuit chip. The court explained that the U.S. manufacturer had not "supplie[d]" a "component" of the chip from the United States because Section 271(f) "refers to physical supply of components, not simply to the supply of instructions" used to fabricate a patented device overseas. 375 F.3d at 1118.

In *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005), however, the Federal Circuit erroneously concluded that master code conveyed overseas via golden master disk "is much more than a prototype, mold, or detailed set of instructions." *Id.* at 1339. This was so, according to the *Eolas* court, because unless "[e]xact duplicates of the software code on the golden master disk are incorporated as an operating element of the ultimate device," "the invention would not work at all." *Ibid.* But that reasoning shows only that the foreign-

produced, computer-readable and "opera[ble]" *copies* of the Windows code might be components; it says nothing at all about whether the master code from which those copies are produced (or, for that matter, an abstract sequence of digits in the ether) can also be considered a component.[12] If a patented shrimp deveining machine will not work without a particular part, that part might well be a statutory component; but the design specifications for that part—which allow production of it and assembly of the patented invention overseas—are not themselves components. Likewise, contrary to the *Eolas* court's entirely unsupported *non sequitur*, the master Windows code here operates as nothing other than a "detailed set of instructions" for the overseas fabrication of a special purpose computer; it cannot be considered a "component" of that special purpose computer.

In the decision below, the Federal Circuit said that "what is being supplied abroad is an actual component, *i.e.*, the Windows operating system, that is ready for installation on a computer to form an infringing apparatus—not instructions to foreign software engineers for designing and coding Windows." Pet. App. 8a. This statement is at war with the parties' stipulation, which explains that the object code stored on the golden master disks, "ready" or not, is "never installed on a computer that is then sold." *Id.* at 45a ¶ 5. Rather, the infringing apparatus is "form[ed]" *only* by the installation of a *copy* of Windows made by the foreign manufacturer pursuant to the instructions embodied in the master version. *Id.* at 46a ¶ 7. The "binary sequence of numbers that 'lacks physical

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[12] In fact, *Eolas* strongly suggests that an abstract digital sequence *cannot* be a component of a patented device. *Eolas* took pains to emphasize that the claimed component was "'computer readable program code.'" 399 F.3d at 1339. Computers lack the capability to read and interpret a "binary sequence of numbers that 'lacks physical existence.'" Second Supp. Cert. Br. 4. Such a sequence must be recorded on a physical medium, like a disk, to be readable and executable by a general purpose computer. *See* U.S. Cert. Br. 9.

existence'" now cited by AT&T constitutes, at most, abstract design instructions and cannot itself be viewed as a component of AT&T's patented invention.[13]

2. Moreover, AT&T's theory that a "binary sequence of numbers that 'lacks physical existence'" can be a "component" under Section 271(f) cannot be reconciled with the text of the statute. As discussed above, a "component" is "a constituent part" or "ingredient." RANDOM HOUSE UNABRIDGED DICTIONARY 419. In a patented cake, the sugar, eggs, and flour would be "components"; but the recipe (assembly instructions) clearly would not be. And likewise, abstract instructions floating in the ether, which are neither readable nor executable by a computer, cannot constitute a component of a programmed-computer invention. To return to the player piano, the "perforated rolls" constitute "component parts of a machine which executed the composition." *Goldstein* v. *California*, 412 U.S. 546, 565 (1973). But the pattern of perforations (a "binary sequence of numbers that 'lacks physical existence'") is not such a component.

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[13] Indeed, AT&T's own patent compels this conclusion. The apparatus claims of the '580 patent are uniformly stated in means-plus-function format. *See, e.g.*, '580 patent, cols. 23-24 (Supp. J.A. 19) ("Apparatus for producing speech message comprising: means for receiving . . . means for converting . . . and means jointly responsive") (italics omitted). *See generally* 5A DONALD S. CHISUM, CHISUM ON PATENTS § 18.03[5] (2005) (discussing means-plus-function specification of patent claims). The patent laws provide that claims written in such means-plus-function format "shall be construed to cover the corresponding structure, material, or acts described in the specification." 35 U.S.C. § 112 ¶ 6. Claims written in such language do not, by force of law, "cover" essential nonphysical predicates to the invention, such as its design. *See, e.g., Symbol Techs., Inc.* v. *Opticon, Inc.*, 935 F.2d 1569, 1575 (Fed. Cir. 1991) ("the scope of such a claim is not limitless, but is confined to *structures* expressly disclosed in the specification and corresponding equivalents") (emphasis added).

Section 271(f) requires the "combination" of components. "Combine" means to "join in a close union" or to "unite." RANDOM HOUSE UNABRIDGED DICTIONARY 408; *see also Deepsouth*, 406 U.S. at 528 (defining "combination" as "union of elements"). Just as one cannot unite a recipe and an egg, a "binary sequence of numbers that 'lacks physical existence'" cannot be joined physically with anything. And, in fact, the object code supplied on the golden master disks *is not* "combined" with other components to practice the patented invention. The foreign-made, computer-readable copies are; but the statute applies only to combinations involving the *original* component shipped overseas. *See* 35 U.S.C. § 271(f)(1) (prohibiting the supply of components "in such manner as to actively induce the combination of *such* components") (emphasis added).

Moreover, abstract design information like an accused nonphysical sequence of numbers cannot be "supplie[d] . . . from the United States" as Section 271(f) requires. To be sure, it is possible to "supply" "information." *See, e.g.*, 26 U.S.C. § 7203 (prohibiting the willful failure to "supply any information" required by tax laws and regulations). But before information can be "supplied," *i.e.*, provided or furnished, it first must be reduced to some physical format, be it a piece of paper, an electromagnetic impulse, or a radio wave. Abstract information that "lacks physical existence" is not susceptible to transmission. More than that, until information is given a physical manifestation, it is impossible to determine the location from which it is supplied. Information cannot be supplied from the United States if it is never physically present in the United States. *See Pellegrini*, 375 F.3d at 1118.[14]

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[14] The implied requirement that a "component" be physical in nature is further supported by other uses of the term "component" in Section 271. Section 271(g)—the companion provision to Section 271(f) that prohibits the importation into the United States of products manufactured overseas

Still, though, the mere fact that design information has been reduced to a physical format does not necessarily mean that it is a component that may be combined with other components into a patented invention. The fact that a recipe for a patented cake is printed on paper does not remotely suggest that the paper may be combined with eggs, flour, and sugar to become part of the cake. Accordingly, AT&T conceded below that "a printed copy of program source code" could not be a component because "it lacks practical application until it is put in a form that a computer can actually use." Resp. C.A. Br. 34-35. Similarly, a manuscript copy of the Windows object code could not be a component because it could not be read or executed by a general purpose computer. And it necessarily follows that a "binary sequence of numbers that 'lacks physical existence'" cannot be a component, because, like the source code manuscript, such an abstract

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[Footnote continued from previous page]

using a process patented under U.S. law—provides that "[a] *product* which is *made* by a patented process will, for purposes of this title, not be considered to be so made after . . . it becomes a trivial and nonessential *component* of another product." 35 U.S.C. § 271(g) (emphases added). In *Bayer AG* v. *Housey Pharms., Inc.*, 340 F.3d 1367 (Fed. Cir. 2003), the Federal Circuit recognized that because the term "product" necessarily implies a physical object of manufacture, the term "component" must also refer only to "a physical product." *Id.* at 1372-73. Similarly, both Section 271(c) and Section 271(f)(2) prohibit the furnishing of a "component" that is "especially made or especially adapted for use" in a patented invention, but carve out exceptions for a component that is a "staple article or commodity of commerce." 35 U.S.C. § 271(c), (f)(2). This Court, however, has never found anything other than a physical product—an object of manufacture—to constitute a staple article of commerce. *See Sony Corp. of Am.*, 464 U.S. at 490 n.41 ("The 'staple article of commerce' doctrine protects those who *manufacture products* incorporated into or used with patented inventions—for example, the paper and ink used with patented printing machines, or the dry ice used with patented refrigeration systems") (emphasis added; citations omitted).

sequence of digits cannot be read or executed by the computer. It cannot direct a computer to do anything.

One final example, drawn from AT&T's patent itself, illustrates the futility of its argument that a "binary sequence of numbers that 'lacks physical existence'" can be a "component" within the meaning of Section 271(f). As noted above, the inventor appended to the '580 patent the source code for a computer program, which if compiled and executed would cause a compatible computer to function as the claimed speech coder apparatus. Once compiled into object code, that very program could be expressed as a "binary sequence of numbers that 'lacks physical existence.'" If a Microsoft programmer were to memorize that sequence, fly to a foreign country, and use the sequence to program 100 computers to function as speech coders, would Microsoft have committed 100 acts of infringement under Section 271(f)? Or, equivalently, would Microsoft commit 100 infringing acts if it were to mail a copy of AT&T's patent to a foreign country, where a programmer compiles the program, makes 100 disk copies of the object code, and installs them on 100 computers? Each of these questions must be answered in the negative, for the simple reason that in neither instance has Microsoft supplied a statutory "component" from the United States. For the same reason, the decision below should be reversed.

CONCLUSION

For the foregoing reasons, the judgment of the court of appeals should be reversed.

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MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR RESPONDENT

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QUESTIONS PRESENTED

1. Whether digital software code—an intangible sequence of "1's" and "0's"—may be considered a "component[] of a patented invention" within the meaning of 35 U.S.C. § 271(f); and, if so,

2. Whether Microsoft's transmission of such code abroad constitutes the "suppl[y]" of such a component within the meaning of that provision.

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ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR RESPONDENT

PRELIMINARY STATEMENT

Section 271(f) of the Patent Act makes it an act of patent infringement to "suppl[y] ... from the United States" either—

> *all or a substantial portion* of the components of a patented invention ... in such manner as to *actively induce* the combination of such components outside the United States in a manner that would infringe the patent if such combination occurred within the United States,

35 U.S.C. § 271(f)(1) (emphasis added), or

> *any component* of a patented invention that is *especially made or especially adapted for use* in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, ... knowing that such component is so made or adapted and *intending* that such component will be

> combined outside the United States in a manner that would infringe the patent if such combination occurred within the United States,

id. § 271(f)(2) (emphasis added). At issue in this case is whether these provisions grant any meaningful protection for inventions practiced through computer software.

During all relevant periods, AT&T held the patent to a sophisticated speech coding and decoding technology. Although AT&T licensed this technology to many companies on reasonable terms, Microsoft wished to exploit AT&T's innovation for free. Microsoft now concedes that it infringed AT&T's patent for years by supplying domestic computer manufacturers with software object code that enabled personal computers in the United States to make use of AT&T's invention. Microsoft also supplied the same object code to *foreign* manufacturers for the same purpose, kept close track of how often they loaded the code onto new computers, and charged them a licensing fee each time they did so. Microsoft nonetheless contends that it may escape liability under Section 271(f) because the code was carried on different physical media to its ultimate destination in foreign computers, and because Microsoft did not supply the medium that carried the code on the last leg of its journey. The district court and court of appeals rejected this argument, held Microsoft liable, and explained that Microsoft's position would strip Section 271(f) of any significance in the software context.

Microsoft sought certiorari on two questions. First, it asked the Court to decide "[w]hether digital software code—an intangible sequence of '1's' and '0's'—may be considered a 'component[] of a patented invention'" within the meaning of Section 271(f). Pet. i (questions presented). Second, Microsoft asked the Court to decide whether, if the answer to that first question is yes, its transmission of the object code abroad constituted the "supply" of such a component. Microsoft rightly gave top billing to the first of these two questions. Whether "an intangible sequence of '1's' and '0's'" (*id.*) can be a "component" of an invention for Section 271(f) pur-

poses is the central issue in this case and logically precedes the "supply" issue.

Microsoft now flips the order of its discussion and addresses the "supply" issue first, but that turns the logical structure of this case on its head. Microsoft's arguments on that issue presuppose that the Court has already accepted Microsoft's dubious claim, deferred to the end of its brief, that intangible object code cannot be a "component" of an invention. When Microsoft finally does address the meaning of "component," it argues for the first time that the very question on which it sought certiorari—whether "an intangible sequence of '1's' and '0's' . . . may be considered a component" (Pet. i.)—is not properly presented after all, because of how Microsoft reads various stipulations in the district court. This is a perplexing argument, because if it had merit and were preserved, certiorari would need to be dismissed as improvidently granted.

If the Court does not dismiss the writ, the answer to the first question presented is straightforward. Microsoft's object code is not just *a* "component," but *the* key component of the foreign-made devices in terms of their ability to practice AT&T's invention. Although that object code must be combined with physical components to form such a device, it is plainly a component of that device, just as a unique collection of intangible words is a component of any book bearing the title *Moby-Dick*, even though those words, too, must be combined with ink and paper before the book can be read. Microsoft would read into Section 271(f) an "*implied* requirement that a 'component' be physical in nature" (Pet. Br. 42 n.14 (emphasis added)), but that position lacks any basis in the statutory text and improperly conflates the physical and non-physical layers of computer technology. And if that position were adopted, it would read Section 271(f) out of the Patent Act for virtually any invention practiced by the use of software, a result Congress did not intend. Finally, Microsoft plainly "supplied" this object code from the United States to foreign computer manufacturers, with the intent that those companies would pay Microsoft a royalty each

time they combined that code with other components to form devices that would infringe AT&T's patent if made or used in the United States.

Microsoft and its allies—including the amicus trade associations that they fund—have long sought to persuade Congress to repeal Section 271(f) altogether. Having so far failed in these legislative efforts, the same alliance urges this Court to strip Section 271(f) of all meaning in the software industry. But the law is the law as it stands today. Under any faithful reading of that law, Microsoft has infringed AT&T's patent and is liable under Section 271(f).

STATEMENT

A. The Physical And Non-Physical Layers Of Computer Technology

At a basic level, computer systems are made up of hardware and software "components." A. Silberschatz, P. Galvin & G. Gagne, *Operating System Concepts* 3 (7th ed. 2005) ("Silberschatz") (stating that the "components" of a computer system include "hardware," "operating system," and "applications programs"). These components are combined to achieve the "fundamental goal of computer systems," which is to "execute user programs and to make solving user problems easier." *Id.* at 5.

The physical parts of a computer are known as "hardware." Today's hardware consists of the physical materials inside the "box"—such as the central processing unit ("CPU"), memory cards, hard drives, and circuitry—and external physical parts such as the video monitor, keyboard, mouse, printer, cabling, and removable devices for storing information, such as compact disks ("CDs"), floppy disks, and magnetic tapes. *See, e.g., Response of Carolina, Inc.* v. *Leasco Response, Inc.*, 537 F.2d 1307, 1326 (5th Cir. 1976).

Computer hardware is not useful unless "programmed" to perform a particular function. A program directs a computer's CPU to open or close numerous electrical switches at particular times, thereby creating electrical signals that cause the various hardware elements to perform desired

tasks. *See, e.g.*, R. White, *How Computers Work* 53 (8th ed. 2006).

In modern computing technology, the hardware is programmed by software in the form of *object code*. Object code—also called "machine language"—is expressed as a precise sequence of binary digits (1s and 0s) that turn particular switches within a computer's microchip circuitry "on" and "off." White, *supra*, at 87.[1] The same object code can be stored or transported in any of a number of different physical containers. For example, the same sequence of 1s and 0s can be represented in the arrangements of indentations ("pits") and unindented spaces ("lands") on the surface of a plastic CD; in rapid bursts of light within a fiber-optic cable; or in the orientations of magnetic fields on a computer's hard drive. But regardless of where a program is stored, it can be executed by a CPU only once the 1s and 0s have been transferred from their storage location to a computer's random-access memory, or "RAM," where they are represented as patterns of electrical charges on a RAM chip. *See id.* at 49.

Today's software technology is highly "modular," which means that software engineers can develop and market their products for use on many different types of computer hardware and in conjunction with many other types of software. Software is thus routinely referred to as a "component" of a larger computer system,[2] and software engineers work on such components without needing to worry about the physi-

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[1] Human programmers normally write software not as object code, but in one of several programming languages such as C++, BASIC, or FORTRAN. Software in that format is known as "source code" and must first be translated into object code through a process called "compiling" in order to function successfully on a computer. *See, e.g.*, White, *supra*, at 94.

[2] *See, e.g.*, Silberschatz, *supra*, at 3; *see also, e.g.*, R. Pressman, *Software Engineering: A Practitioner's Approach* 125 (6th ed. 2005) ("In the software context, a component could be a computer program, a reusable program component, a module, a class or object, or even a programming language statement."); C. Szyperski, *Component Software: Beyond Object-Oriented Programming* 10 (2d ed. 2002) ("The distinguishing properties of software are of a mathematical rather than a physical nature.").

cal details of how the code they write will be expressed on any particular machine. Such modularity allows the software industry to achieve enormous efficiency and flexibility by "breaking up a complex system into discrete pieces—which can then communicate with one another only through standardized interfaces within a standardized architecture—[to] eliminate what would otherwise be an unmanageable spaghetti tangle of systemic interconnections." R. Langlois, *Modularity in Technology and Organization*, 49 J. Econ. Behav. & Org. 19, 19 (2002).

Computer scientists thus describe a modern computer system as consisting of several different "layers" of modular technology. *See* Silberschatz, *supra*, at 72. The bottommost layer consists of a computer system's physical hardware, such as the CPU and RAM, as well as the other physical devices used to store and transmit data. The higher layers consist of software code. "Each layer is implemented with only those operations provided by lower-level layers. A layer does not need to know how these operations are implemented; it needs to know only what these operations do. Hence, each layer hides the existence of certain data structures, operations, and hardware from higher-level layers." *Id.* at 60.[3]

The layered nature of software and hardware is immensely important to the structure of the computer market-

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[3] *See, e.g., ISC-Bunker Ramo Corp.* v. *Altech, Inc.*, 765 F. Supp. 1310, 1318 (N.D. Ill. 1990) ("Software is commonly developed to be used in layers."). Microsoft's Windows software is itself divided into various layers. For example, Microsoft's Windows XP system is built on a "hardware-abstraction layer" or HAL, which "manipulates hardware directly, isolating the rest of Windows XP from hardware differences among the platforms on which it runs." Silberschatz, *supra*, at 787. This lower layer in the operating system enables Windows to be "moved from one hardware architecture to another with relatively few changes" (a feature known as "portability"). *Id.* Windows also includes a large number of higher-layer "applications" programs, such as a calculator, clock, Internet browser, and—particularly relevant here—voice-manipulation programs such as NetMeeting and Sound Recorder, which enable the practice of AT&T's patented technology. J.A. 16-17.

place. Software developers such as Microsoft need not also build computers on which to run their programs, and computer firms like IBM or Dell need not develop software tailored to their specific systems. Instead, as long as certain compatibility standards are met, software object code can be developed and run on different manufacturers' computer systems. While both object code and hardware are needed for a computer to function properly, they may be—and frequently are—developed, advertised, and purchased separately. *See* Silberschatz, *supra*, at 836 ("[U]sers can choose and upgrade hardware to match their budgets and performance requirements without needing to alter the applications they run."). Accordingly, software developers and consumers understand that a particular piece of software—such as Windows, WordPerfect, or TurboTax—refers to a particular program, regardless of whether the program's object code is burned onto on a compact disk, saved on the magnetic platters of a computer's hard drive, transmitted over a fiber-optic cable, or executed on a RAM chip.

B. AT&T's Invention

In 1981, two scientists at Bell Laboratories (then part of AT&T), Dr. Bishnu Atal and Mr. Joel Remde, filed a successful application for a patent on a pioneering advance in digital speech compression. Modern telecommunications systems generally transmit speech by converting it into digital data or "code"; the code is transmitted to its destination, where it is then "decoded" back into a speech signal. Dr. Atal and Mr. Remde invented a novel technique that greatly enhanced the quality of the speech signal heard at the destination while decreasing the amount of data that needed to be transmitted. This invention—disclosed and claimed in U.S. Reissue Patent 32,580 ("the '580 patent"), which AT&T held until it expired in 2001—is widely recognized as a landmark in telecommunications technology and has won many prestigious awards. Ct. App. J.A. 509-510.

As relevant here, the '580 patent claims an apparatus comprising means for generating coded speech signals from audible voice sounds and for receiving those coded signals

and converting them back into audible voice sounds. Supp. J.A. 18-19 ('580 patent, cls. 29, 40-41).[4] From the outset, Dr. Atal and Mr. Remde recognized that the invention would be practiced by writing software that, when installed on a computer, would enable the computer to code and decode speech signals in the disclosed manner. Indeed, Dr. Atal wrote such software himself and appended excerpts of the source code to the '580 patent. *Id.* at 12-16.

In 1996, the International Telecommunications Union, an organization responsible for the promulgation of international standards for the telecommunications industry, recommended this speech compression technique as an industry standard. Many companies—including cellular telephone manufacturers, software developers, videoconferencing providers, and Internet companies whose products involved speech transmission—licensed the technology from AT&T to ensure that their products were compatible with the recommended standard. As Microsoft notes (Br. 3), AT&T's technology, discovered over 25 years ago, is still widely used today "in mobile phones and personal computers to achieve high-quality reproduction of digitally recorded speech."

C. Microsoft's Acknowledged Infringement Of AT&T's Patent

Microsoft, a U.S.-based software developer, has long used AT&T's speech-compression technique by including in its Windows operating system certain object code that, once installed on a compatible computer and loaded into RAM, enables the computer to perform the coding and decoding ("codec") functions claimed in the '580 patent. Microsoft develops, tests, and debugs its Windows software, including speech codecs, in the United States. Pet. App. 22a. Microsoft then markets the finished software product in the United States and abroad, where it is pre-installed on com-

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[4] AT&T also asserted that Microsoft infringed two other claims covering *methods* for coding and decoding speech. *Id.* at 16, 19 ('580 Patent cls. 2, 42).

puters manufactured by other companies and also sold as separately packaged software. Microsoft collects a license fee for every computer sold abroad that contains its Windows software. *See Microsoft Corp.* v. *Commissioner*, 311 F. 3d 1178, 1181 (9th Cir. 2002).

Microsoft refused to license AT&T's patented technology despite repeated requests (J.A. 17), and in 2001 AT&T sued Microsoft for patent infringement. AT&T asserted several bases of infringement, two of which Microsoft conceded after AT&T presented its case-in-chief to the jury. First, Microsoft stipulated that it directly infringed AT&T's patent under Section 271(a)[5] by making infringing devices in the United States: namely, by installing the Windows object code on its own computers during the process of developing, testing, and debugging the software. Pet. App. 42a; Pet. Br. 4 n.1. Second, Microsoft stipulated to liability under Section 271(b)[6] for actively inducing other parties to infringe AT&T's patent—specifically, by sending the Windows object code to U.S. computer manufacturers (also called original equipment manufacturers or "OEMs") with the specific intent that they install Windows on their computers and thereby make devices that infringe AT&T's patent. Pet. App. 42a; Pet. Br. 4.

At issue here is Microsoft's liability for its provision of the Windows object code to computer manufacturers *outside* the United States. Microsoft provides that object code to foreign manufacturers from the United States in the same manner as it provides the code to U.S.-based manufacturers: by sending it on a CD known as a "golden master disk" or in an encrypted electronic transmission directly to the manufacturer. Pet. App. 23a, 45a ¶¶ 4-5, 7 (stipulation). The code is then transferred onto the hard drives of foreign-

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[5] "[W]hoever without authority makes . . . any patented invention, within the United States . . . , infringes the patent." 35 U.S.C. § 271(a).

[6] "Whoever actively induces infringement of a patent shall be liable as an infringer." 35 U.S.C. § 271(b).

manufactured computers, which are sold in foreign countries as computers containing Microsoft's Windows operating system. *Id.* at 45a.[7] Microsoft stipulated that it specifically intends that the object code it sends will be installed into those computers. *Id.* at 46a ¶ 9. It is undisputed that, if performed in the United States, the assembly and use of the computers containing that object code would infringe AT&T's patent.

AT&T claimed that, through this scheme, Microsoft supplied a "component" of a patented invention from the United States in a manner that infringed AT&T's patent under 35 U.S.C. § 271(f)(1) and (2). Microsoft moved for summary judgment, arguing that software cannot be a "component" under the statute because it is "intangible." Pet. App. 24a. In its reply brief in the district court, Microsoft raised the additional argument that the Windows object code incorporated into the foreign-manufactured computers had not been "supplied from" the United States because the code was replicated abroad before installation. *Id.* at 24a-25a.

D. The District Court Judgment

The United States District Court for the Southern District of New York rejected Microsoft's argument that the Windows object code cannot be a "component" under Section 271(f). The court recognized that "[t]he object code or software that is contained on each golden master disk or transmitted electronically, as opposed to the golden master disk or method of encrypted transmission itself, is at the heart of the parties' dispute." Pet. App. 29a. The court also noted that, despite Microsoft's argument that software code is "intangible," it is nonetheless a component of a patentable apparatus when used "'in conjunction with a physical structure such as a computer memory.'" *Id.* at 30a-31a (quoting

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[7] Microsoft also delivered its object code to foreign companies called "replicators," which transferred the Windows object code exactly as it was supplied from the United States to other storage media for sale or delivery to customers. Pet. App. 23a, 45a ¶ 6.

United States Patent & Trademark Office, *Manual of Patent Examining Procedure* ("*MPEP*") § 2106, at 2100-13 (8th ed. 2003)). Moreover, the court added, neither the statutory text nor the legislative history supports limiting the term "component" to physical machines or structures, nor did Congress ever suggest that it meant to exclude software components from Section 271(f). *Id.* at 31a. The court also noted that object code is actually "incorporated into the end-product" and therefore rejected Microsoft's claim that object code should be treated as design information, assembly instructions, or data generated from a patented process. *Id.* at 34a.

The district court further held that Microsoft "supplied" the Windows object code from the United States. Pet. App. 35a. Microsoft's contrary argument, the court explained, ignored the undisputed fact that "the object code is originally manufactured in the United States." *Id.* The court also deemed it significant that Microsoft itself had "acknowledged that if individual disks with the infringing Windows object code were sent abroad for incorporation into each foreign-assembled computer (rather than one golden master disk), Microsoft would be liable for infringement under Section 271(f)." *Id.* at 36a n.7. The Court found that there was no basis under "the letter and intent of the statute" to distinguish between that situation and this case. *Id.* at 35a-36a.

Based on these conclusions, Microsoft stipulated to a judgment of infringement and entered into a settlement agreement with AT&T. Pet. App. 42a-43a. That agreement preserves Microsoft's right to appeal the district court's decision regarding Section 271(f), and prescribes different dollar amounts that Microsoft must pay AT&T depending on the outcome of the appeal.

E. The Court Of Appeals Judgment

The court of appeals affirmed. At the outset, it noted that the first question presented—"whether software may be a 'component' of a patented invention under § 271(f)"—had been answered in *Eolas Technologies Inc.* v. *Microsoft*

Corp., 399 F.3d 1325 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005), in which the court had held that Section 271(f) is not limited to "patented 'machines' or patented 'physical structures.'" Pet. App. 4a (quoting 399 F.3d at 1339).

With respect to the second question—whether the Windows object code in the foreign-made computers had been "supplied" from the United States—the court of appeals sought to discern the "ordinary, contemporary, common meaning" of the word "supply" in the context of software distribution. Pet. App. 6a (quoting *Williams* v. *Taylor*, 529 U.S. 420, 431 (2000)). Like the district court, the court of appeals rejected Microsoft's argument that Section 271(f) liability could attach where "each disk . . . is shipped and incorporated into a foreign-assembled computer," yet not where a single disk was sent with the intent that the object code it contained be replicated and incorporated into each computer, thereby "saving material, shipping, and storage costs." *Id.* at 7a. The court of appeals also rejected Microsoft's analogy to design instructions, since the Windows object code was shipped "ready for installation on a computer to form an infringing apparatus" and did not constitute "instructions to foreign software engineers for designing and coding Windows." *Id.* at 8a.

Judge Rader dissented. Although he agreed that software was a "component" under Section 271(f) (Pet. App. 11a) and recognized that the remaining question was whether "intangible software components" were supplied from the United States (*id.* at 13a), he argued that liability should not attach because "the master disk" was not itself incorporated into the foreign-made computers (*id.* at 16a). Judge Rader did not explain the apparent discrepancy between his initial finding that intangible software could be a "component" and his later assumption that the "component" in this case was a physical master disk. Judge Rader also believed that imposing liability on Microsoft in this case improperly gave "extraterritorial effect to U.S. patent laws" (*id.* at 17a), even though Microsoft was held liable solely for actions it took within the United States.

SUMMARY OF ARGUMENT

1. This case turns on the answer to the first question presented in Microsoft's petition for certiorari: "[w]hether digital software code—an intangible sequence of '1's' and '0's'—may be considered a 'component[] of a patented invention' within the meaning of Section 271(f)(1)." Pet. i (questions presented). Having persuaded this Court to review that question of general application, Microsoft now advances an interpretation of the record that, in its view, precludes the Court from resolving the question. It is unclear what Microsoft hopes to achieve by this tactic. If its argument on this point were both preserved and meritorious (it is neither), the proper course would be not to rule for Microsoft, but to dismiss the writ of certiorari as improvidently granted.

If the Court does not dismiss the writ, the first question presented in the petition should be answered in the affirmative. The term "component" refers to any part of a larger system, whether tangible or intangible, and object code is plainly a component of any computer system that practices AT&T's invention. Indeed, computer scientists routinely speak of software "components" that are independent of any particular physical-layer medium that may be used to store or transmit those components at any given moment. Of course, object code must be combined with physical-layer components to create a patentable machine, but that does not make it any less a component in its own right. Microsoft's contrary argument both ignores the plain meaning of the term "component" and collapses the distinction, central to the computer industry, between higher (code) and lower (hardware) layers of computer technology.

2. An affirmative answer to the first question presented compels an affirmative answer to the second question: whether Microsoft "supplie[d]" object code for combination with physical-layer components abroad to produce devices that, if assembled in the United States, would directly infringe AT&T's patent. That is exactly what Microsoft did. Microsoft's contrary view assumes the correctness of its ar-

gument on the first question presented (addressed second in Microsoft's brief) that the relevant "component" is the *physical medium containing* the object code, not the code itself, which remains the same regardless of how it is physically embodied at any given moment. Microsoft's assumption is false for the reasons discussed.

Nor is there merit to Microsoft's argument that, because Congress's enactment of Section 271(f) was prompted by this Court's decision in *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972), the provision should apply only in cases where, as in *Deepsouth* itself, a U.S. firm ships physical components for assembly abroad. If Congress had meant to confine Section 271(f) to *physical* components, it would have said so in the text. And because that provision indisputably applies in contexts far removed from the facts of *Deepsouth*, it would be nonsensical to rely on those facts as a basis for reading artificial limitations into the statutory language.

3. Microsoft's appeal to principles of "technological neutrality" is highly ironic, because those principles cut strongly against Microsoft's position. If, as Microsoft argues, only physical items containing object code can qualify as "components," Section 271(f) would have vanishingly narrow application to the software industry. For example, as Microsoft now appears to acknowledge, its position would insulate it from liability even if it directly sent an individual CD containing the relevant object code for each foreign-made computer, because end users normally transfer such code from the pits and lands of the CD to magnetic properties on each computer's hard drive. Microsoft cannot seriously deny that its position would amount to a near-total repeal of Section 271(f) for the software industry—an outcome Microsoft has doggedly (but so far unsuccessfully) pursued in Congress. Under current law, however, Microsoft's position is a most implausible reading of this statute, as even Microsoft concedes that Congress had no intent to treat the software industry differently from any other industry.

Microsoft's separate invocation of the presumption against extraterritoriality is untenable in several respects. First, the presumption is simply inapposite here, because Section 271(f) renders Microsoft liable not for "extraterritorial" conduct, but for domestic conduct: shipping software object code from the United States with the requisite intent. Second, the presumption cannot supersede statutory text that speaks directly to a provision's geographic scope, as Section 271(f) does. Third, it would be particularly inappropriate to apply a judicial presumption to narrow the scope of a statute that Congress enacted for the sole purpose of *overcoming* the judicial application of *that very presumption* in a prior case. Fourth, it would make no policy sense to apply that presumption here, as there is no basis for concern about any actual conflict with the prerogatives of any foreign sovereign.

Finally, Microsoft's other policy arguments quarrel not with the application of Section 271(f) in this context, but with Congress's decision to enact that provision in the first place. Congress considered and rejected the arguments that foreign patent protections are sufficient to protect U.S. inventors and that enactment of Section 271(f) would create undue incentives for certain types of businesses to move their operations offshore. Congress, not this Court, should perform any fine-tuning of that policy judgment.

ARGUMENT

This case presents two questions: first, whether intangible object code can constitute a "component" of a patented invention for purposes of Section 271(f); and second, whether Microsoft "supplied" such a component from the United States to its foreign business partners. These two questions should be asked and answered in that logical order. It is impossible to determine whether Microsoft "supplied" the relevant "component" from the United States without first deciding what the relevant "component" is—which, as the Solicitor General observes, is the "logically antecedent" question of the two (U.S. Cert. Br. 19).

Perhaps recognizing that the case turns on identifying the "component" at issue—and that its position on that question is weak—Microsoft inverts the questions presented and assumes throughout Part I of its brief that the Court has already agreed with Microsoft that a Section 271(f) "component" must be a particular physical thing embodying object code, rather than the object code itself. Because that approach begs the primary question in this case, we address the questions in the order in which they are presented in Microsoft's petition.

I. INTANGIBLE OBJECT CODE IS A "COMPONENT" OF A PATENTED INVENTION

A. If Microsoft Is Correct That The First Question Presented In The Petition Is Not Properly Before The Court, Certiorari Should Be Dismissed As Improvidently Granted

In its petition for certiorari, Microsoft invited this Court to review an issue of general application: "[w]hether digital software code—*an intangible sequence of '1's' and '0's'*—may be considered a 'component[] of a patented invention' within the meaning of Section 271(f)(1)." Pet. i (emphasis added). That is the precise issue addressed by both lower courts, which likewise conceptualized the disputed "component" as the intangible "object code contained on the golden master disks," not as the golden master disks themselves. Pet. App. 24a (district court); *see also id.* 4a (court of appeals holding that Section 271(f) is not limited to "'physical structures'" (quoting *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005)).[8] As the district court confirmed, "the heart of the parties' dispute" has always involved "[t]he object code or software that is contained on each golden master disk or transmitted electronically, as opposed to the golden master disk or method of encrypted transmission itself." *Id.* at 29a.

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[8] *See also* Pet. App. 13a (Rader, J., dissenting) (noting that this case involves "intangible software components").

Having obtained certiorari, Microsoft now argues that this case does not present the first question after all. It contends that the parties stipulated that "the 'components' in issue were the golden master disks and the encrypted transmissions," not the intangible object code that they transmitted, and that the lower courts should have decided the case on that basis. Pet. Br. 10, 34-35. This is a bizarre gambit. If this argument were correct and preserved, "the record [would] not fairly present" the question of general application on which Microsoft sought certiorari, *Rogers* v. *United States*, 522 U.S. 252, 259 (1998), and the appropriate course would be to dismiss the writ as improvidently granted. *See id.*; Stern & Gressman, *Supreme Court Practice* 329 (8th ed. 2002) (citing cases). This Court did not grant certiorari to correct the lower courts' supposed misunderstanding of a case-specific stipulation of facts.

If, however, the Court elects to decide this case on the merits, Microsoft's argument about that stipulation is neither preserved nor correct. First, Microsoft waived this new argument by failing to present it either to the court of appeals or in its petition for certiorari. Before the court of appeals, Microsoft challenged the district court's conclusion that "the intangible Windows object code, as distinct from a golden master *disk* or other software *media* upon which the software information may be stored, was a *component* of the patented computer systems supplied from the United States." Microsoft Ct. App. Br. 8. And Microsoft never gave this Court any inkling at the certiorari stage that it would later try to sabotage the Court's consideration of what Microsoft called a "recurring question of vital importance." Pet. 11.

This Court's rules admonish even a *respondent*, in *opposing* certiorari, that "[a]ny objection to consideration of a question presented based on what occurred in the proceedings below, if the objection does not go to jurisdiction, may be deemed waived unless called to the Court's attention in the brief in opposition." S. Ct. Rule 15.2. *A fortiori*, a petitioner may not pull the rug out from under this Court's con-

sideration of an issue after persuading this Court that the issue has broad general significance and that the case presents a sound vehicle for resolving it.[9]

Second, Microsoft's interpretation of the stipulation is without merit. The stipulation states: "AT&T alleges, and Microsoft disputes, that the computer systems assembled abroad *with the foreign replicated object code* contain 'components' that were supplied by Microsoft from the United States." Pet. App. 46a (emphasis added). The statement on which Microsoft fastens—that Microsoft did not supply a component "other than the 'golden master disks' and the encrypted transmissions *of Windows object code*," *id.* at 47a (emphasis added)—merely focused the analysis on the "Windows object code" as transmitted via the golden master disks and electronic transmissions. It does not state, as Microsoft now contends (Br. 34), that the "[p]hysical [m]edia" are the only "components" at issue in this case. The district court confirmed AT&T's understanding of the stipulation in its final judgment (to which Microsoft also stipulated), holding that "the golden master disks and the encrypted transmissions of Windows object code *contain* 'components' supplied from the United States by Microsoft" and that "the computer systems assembled abroad *with the foreign-*

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[9] Against this backdrop, it is the height of irony for Microsoft to accuse AT&T of engaging in a "duck-and-dodge tactic" by discussing the question on which certiorari has now been granted (Pet. Br. 34). Remarkably, Microsoft chides AT&T for including in its final certiorari-stage brief a description of the first question presented that is taken directly from *Microsoft's own petition* and the Solicitor General's brief in support of certiorari. *Compare* Pet. Br. 33 (criticizing AT&T for characterizing the first question presented as whether "'intangible 1s and 0s,' a binary sequence of numbers that 'lacks physical existence,'" can qualify as a "component" (quoting AT&T Second Supp. Br. 1, 4)) *with* Pet. i (characterizing question presented as whether "an intangible sequence of '1's' and '0's' ... may be considered a 'component'") *and* U.S. Cert. Br. 8-9 (addressing Microsoft's argument that "software cannot be a 'component' of a patented invention because it is 'intangible information'" and because "the concept of the Windows software lacks physical existence" (quoting Pet. 15-17)).

replicated Windows object code that was installed from the golden master disks or the encrypted transmissions *contain* 'components' that were supplied by Microsoft from the United States." Pet. App. 42a ¶ 4 (emphasis added).

B. Section 271(f) Encompasses All "Components" Of An Invention, Including Intangible Components Such As Object Code

1. The term "component" encompasses both physical and non-physical parts of a system

The Windows object code consists of many types of programs, some of which enable a general-purpose computer to practice AT&T's invention. Microsoft has stipulated that it directly infringed AT&T's patent under Section 271(a) by making and using infringing computer devices in the United States while developing, testing, and debugging the Windows code on Microsoft-owned computers. *See* Pet. App. 42a; Pet. Br. 4 n.1. And Microsoft also stipulated that it unlawfully induced the infringement of AT&T's patent under Section 271(b) by sending the Windows object code to U.S. computer manufacturers for inclusion in computers sold in the United States, in essentially the same way that it sent the same code to foreign manufacturers for inclusion on computers abroad. *See* Pet. App. 42a; Pet. Br. 4.

The primary question in this case is whether that object code is a "component" of the foreign-made computers that practice AT&T's patented technology, such that Microsoft's transmissions of the object code to foreign manufacturers infringed AT&T's patent under Section 271(f). Under any plain-language interpretation of that term, the answer is yes.

"Component" means "a constituent part" or "ingredient." *Webster's Third New International Dictionary* 466 (1981) ("*Webster's Third Int'l*"). The term broadly encompasses not just the physical, but also the non-physical, parts of a composite system or device. *See id.* (citing, as example of usage, "the essential [components] of Kantian philosophy"); *see also* J.A. 34 (*Microsoft Computer Dictionary* 116

(5th ed. 2002)) (defining "component" as a "discrete part of a larger system or structure").

Accordingly, the word "component" is routinely used to describe software independent of any physical format, whether as part of a computer system consisting of both hardware and software or as part of a larger non-physical software program.[10] Microsoft itself uses the term that way in its own publications and patents.[11] The U.S. Patent and Trademark Office's Manual of Patent Examining Procedure

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[10] *See, e.g.*, Silberschatz, *supra*, at 3 (including among the "components" of a computer system "the *hardware*, the *operating system*, [and] the *application programs*" (emphasis in original)); J. Peterson & A. Silberschatz, *Operating System Concepts* 1 (1983) (same use of "components"); Pressman, *supra*, at 125 ("In the software context, a component could be a computer program, a reusable program component, a module, a class or object, or even a programming language statement."). Indeed, an entire academic literature has arisen to explore how software engineers design "component software" for use and reuse within larger software systems—a discipline that refutes Microsoft's effort to limit the word "component" to "physical" material (Br. 42 n.14). *See, e.g.*, Pressman, *supra*, at 7 ("A software component should be designed and implemented so that it can be reused in many different programs."); *id.* at 815-816 (defining the process of "component-based software engineering" as "the design and construction of computer-based systems using reusable software 'components'").

[11] *See, e.g.*, J.A. 34 (*Microsoft Computer Dictionary* 116 (5th ed. 2002)) (defining "component" as a "[a]n individual modular software routine that has been compiled and dynamically linked, and is ready to use with other components or programs"); J.A. 29 (Microsoft Windows preinstallation guide) (describing as "Additional components" any "hardware, drivers, *applications, and so on* that you want to preinstall" (emphasis added)). One of Microsoft's patents reproduces a fragment of source code that it describes as having "three main components," the functions of which are described without reference to any particular physical medium. Supp. J.A. 62-63 (U.S. Patent No. 6,738,773, col. 6 l. 58 to col. 7, l. 41). Other Microsoft patents likewise refer to software components regardless of any particular physical embodiment. *See, e.g., id.* at 29 (U.S. Patent No. 6,725,262, col. 5, ll. 23-28) (referring to "executable software components" that "reside at various times in different storage components of the computer"); *id.* at 50 (U.S. Patent No. 6,727,917, col. 3, ll. 11-14) (stating that "input/output components" include "software").

employs the same usage,[12] as do numerous judicial decisions.[13] Several of Microsoft's own amici thus concede that Microsoft is wrong on the first question presented and that intangible software indeed qualifies as a "component" for purposes of Section 271(f). *See, e.g.*, American Intellectual Property Law Ass'n Br. 4-11; Houston Intellectual Property Law Ass'n Br. 6-8; Intellectual Property Professors Br. 1; Professor Edward Lee Br. 3 n.4.[14]

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[12] *See, e.g.*, *MPEP* § 2106.01 at 2100-17 (8th ed., 5th rev., 2006) (discussing "data structures and computer programs which impart functionality when employed as a computer component"); *id.* § 2106.01, at 2100-18 (referring to "computer software and hardware components"); *id.* § 2161.01, at 2100-163 (referring to patent applications that claim elements that are "partially comprised of a computer software component"); *id.* § 2164.06(c), at 2100-198 (referring to computer systems "which include a computer as well as other system hardware and/or software components").

[13] *See, e.g.*, *Globetrotter Software, Inc.* v. *Elan Computer Group, Inc.*, 362 F.3d 1367, 1370 (Fed. Cir. 2004) (stating that license agreements may "prevent the software purchaser from using different components of a suite of programs on different computers simultaneously"); *United States* v. *Microsoft Corp.*, 253 F.3d 34, 93 (D.C. Cir. 2001) ("A justification for bundling a component of software may not be one for bundling the entire software package . . . ."); *Addamax Corp.* v. *Open Software Found., Inc.*, 152 F.3d 48, 49 (1st Cir. 1998) ("[S]ecurity software is a component that can be used with the operating system to restrict outside access to sensitive information."); *Response of Carolina, Inc.* v. *Leasco Response, Inc.*, 537 F.3d 1307, 1326 (5th Cir. 1976) (stating that a computer system can be "broken into three components: the computer hardware, the operating system (systems software) and the applications programs (application software)"); *Wireless Agents, L.L.C.* v. *Sony Ericsson Mobile Communs. AB*, No. 3:05-CV-0289-D, 2006 WL 2239112, at *2 (N.D. Tex. Aug. 4, 2006) (discussing patent infringement "by devices that use non-physical components, e.g. software").

[14] The Solicitor General (Br. 10) supports the court of appeals' conclusion that "software can be a component of a patented invention," but then claims that the "component" at issue is the "physical copy of the software installed on a particular computer." But the court of appeals expressly rejected Microsoft's argument that components must be "physical," as the Solicitor General himself acknowledges. *See* Pet. App. 4a (stating that "components" are not limited to "'physical structures'" (quoting *Eolas*, 399 F.3d at 1339)); U.S. Br. 6 (quoting the same language). The

Microsoft nonetheless continues to advocate what it candidly describes as an "*implied* requirement that a 'component' be physical in nature." Pet. Br. 42 n.14 (emphasis added). But that "implied" limitation would contradict the plain text of the statute. If Congress had so intended, it could have confined Section 271(f) to the supply of "tangible" components of an invention, as Microsoft prefers (Pet. i), or "physical" components, as the Solicitor General prefers (Br. 13), or "elements" of a patent claim, as *amicus* Eli Lilly prefers (Br. 12). Congress certainly knew how to limit patent-law provisions in those respects, having framed other sections of the Patent Act by reference to claim elements or physical matter.[15] But Congress chose not to impose such limitations on the scope of Section 271(f), and for good reason. Intangible "code ... is not only *a* component," but "*the key* part" of virtually any invention practiced through software. *Eolas*, 399 F.3d at 1339 (emphasis added). Without the object code, the foreign-made computers would be collections of useless hardware; they certainly would not be able to perform the complex task of coding and decoding speech signals. *See, e.g.*, Pressman, *supra*, at 2 (software "delivers the computing potential embodied by computer hardware").

Indeed, as discussed in Point III.A below, if object code as such did *not* qualify as a "component" of such products, Section 271(f) would have no meaningful application to the software industry. Congress did not intend that result. Software was central to many patentable inventions when

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Solicitor General nowhere explains why the relevant "component" should be limited to a "physical copy" when the court of appeals—which the Solicitor General contends answered the first question presented "correctly" (U.S. Br. 7)—held to the contrary.

[15] *See, e.g.*, 35 U.S.C. § 101 (providing for patenting of a "machine, manufacture, or composition of matter"); *id.* § 112 ¶ 6 (referring to an "element" of a patent claim, as well as "structure" and "material"); *id.* § 287(a) (providing for marking of "any patented article" by "fixing thereon the word 'patent'"); *id.* § 292(a) (prohibiting "mark[ing] upon, or affix[ing] to, ... any unpatented article" the word "patent").

Congress enacted Section 271(f) in 1984.[16] And as Microsoft itself agrees, "there is no indication that Congress meant to treat software any differently" from other technology for purposes of Section 271(f). Pet. Br. 8-9 (internal quotation marks and ellipsis omitted).[17]

2. Object code is an essential component of software technology even though it must be combined with physical components to function

Microsoft contends (Br. 38) that object code itself, apart from any physical manifestation, cannot be a "component" because it is not "readable and executable by a computer" in that state. That is a non sequitur. Of course object code must be *combined* with a physical component—such as a CD, hard drive, or memory chip—before it can be transmitted or used. But in that sense it is no different from any other component addressed by Section 271(f), which may have no utility on its own but yields a novel and useful device when

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[16] *See, e.g.*, *Diamond* v. *Diehr*, 450 U.S. 175, 187 (1981) (holding that a device using a computer program may be patentable); *In re Comstock*, 481 F.2d 905, 909-910 (C.C.P.A. 1973) (same); R. Pressman, *Software Engineering: A Practitioner's Guide* 1 (2d ed. 1987) (noting that *Business Week* article entitled *Software: The New Driving Force*, published on February 23, 1984, appeared "about ten years too late," given that "software has surpassed hardware as the key element to the success of many businesses, products, and systems" and "is often the key factor that *differentiates*"). Indeed, the original patent application for AT&T's technology was filed in 1981, and the patent issued in 1984.

[17] Microsoft's reliance on Section 271(g) for its contrary interpretation of Section 271(f) (Br. 42 n.14) is meritless. Section 271(g) bases infringement liability not on the shipment of a component, but on the importation of "a product which is made" by a U.S.-patented process. 35 U.S.C. § 271(g) (emphasis added). Although the words "product" and "made" have been held to reach physical products only, *see Bayer AG* v. *Housey Pharms., Inc.*, 340 F.3d 1367, 1377 (Fed. Cir. 2003), neither word appears in Section 271(f). And while Section 271(g) envisions that a "product . . . made" outside the United States might become a "trivial and nonessential component of another product," the fact that one physical "product" might become a "component" of another physical "product" under Section 271(g) does not remotely suggest that intangible object code cannot be a "component" of a "patented invention" for purposes of Section 271(f).

combined with other components. Congress nowhere suggested that Section 271(f) applies only to "components" that are independently useful or novel *before* their combination with other components. *Cf.* U.S. Br. 12 ("The nonpatentability of software code standing alone has no bearing . . . on whether software can be a component of a patented invention under Section 271(f)." (emphasis omitted)).

Microsoft similarly argues (Br. 11) that object code itself cannot be a "component" for Section 271(f) purposes on the theory that, if it lacks physical existence, it is not "capable of being 'combined' with other components" and, indeed, "cannot be combined with anything." *See also id.* at 42-44; *cf.* U.S. Br. 15. This is nonsense. In ordinary language, "combine" means "to cause (as two or more things or ideas) to mix together," as exemplified by such locutions as "*combining* the language of the gutter with ideas of undoubted worth" and "his talents and looks [*combined*] got him the job." *Webster's Third Int'l* 452 (definitions of "combine" and "combined"). It is perfectly natural to speak of combining intangible object code with physical components such as a hard drive or CD to make software technology work within a variety of computer systems. *See, e.g.*, Pressman, *supra*, at 124 (stating that the various elements of a computer-based system, including software and hardware, "combine in a variety of ways"); Autodesk Br. 7 (stating that "intangible" software code is "combined outside the United States").

Microsoft's contrary argument ignores not only the plain meaning of the text, but the basic structure of modern computer technology. As discussed in the Statement, *supra*, today's computer systems consist of conceptually distinct layers of technology, some tangible and some intangible. In a computer system, "hardware is the bottom layer, and software sits on top." E. Garrison Walters, *The Essential Guide to Computing* 135 (2001); *see also* Silberschatz, *supra*, at 60. Similarly, the public Internet consists not just of "physical layer" equipment in the form of wires and routers, but also (among other things) "a 'logical' or 'code' layer—the code that makes the hardware run," including the intangible

"protocols that define the Internet." L. Lessig, *The Future of Ideas: The Fate of the Commons in a Connected World* 23 (2002) (citing Y. Benkler, *From Consumers to Users: Shifting the Deeper Structures of Regulation*, 52 Fed. Communications L.J. 561, 562-563 (2000)). The Internet exists because engineers in various disciplines have succeeded in *combining* the technologies on these distinct layers into a single communications system.

The personal computer industry operates on the same basic principle. Computer manufacturers such as Dell or HP, and CD manufacturers such as Philips, make physical-layer devices for storing or transporting object code. These companies can modify or upgrade their technology's ability to handle any given sequence of 1s and 0s without having to worry about precisely *which* sequences of 1s and 0s their products will handle or for purposes of what application. Similarly, software developers such as Corel or Adobe may write computer programs without fretting the details of precisely how the 1s and 0s of the programs' object code will be expressed in the pits and lands of a given CD, in the magnetic storage devices of a given personal computer, or in the bursts of light in a given telecommunications carrier's fiber-optic transmissions. Such independence of the physical layer is possible because "[s]oftware is a *logical* rather than a *physical* system element." Pressman, *supra*, at 5 (emphasis added).[18]

Here, the use of AT&T's invention requires a combination of several different components. On the physical layer, it requires hardware, including a RAM chip and a CPU. On a non-physical level, it requires the use of intangible object code, which (once loaded into RAM) tells a computer's CPU

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[18] *See also* Silberschatz, *supra*, at 60 ("Each layer is implemented with only those operations provided by lower-level layers. A layer does not need to know how these operations are implemented; it needs to know only what these operations do. Hence, each layer hides the existence of certain data structures, operations, and hardware from higher-level layers.").

how to manipulate particular speech signals. Of course, the code component alone is not itself a "process, machine, manufacture, or composition of matter" and must therefore be combined with the physical-layer components before an inventor can obtain a patent. 35 U.S.C. § 101.[19] Nonetheless, code remains not only a component of that invention, but by far the most important component from an intellectual property perspective. Only when combined with object code can the foreign-made computers (often a collection of mostly commodity parts) become an invention that is "new and useful." *Id.*[20]

By analogy, the unique series of words that constitutes *Moby-Dick*, while intangible, retains its independent identity as such no matter how it is expressed as a physical matter—whether it appears in a paperback edition with a serif typeface, a hardcover edition with a sans serif typeface, or as the voice of a narrator on an audio CD. Likewise, the object code for a software program retains *its* distinct identity no

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[19] Sometimes a program's object code is further combined with other *intangible* components. For example, an encryption algorithm may be used to cloak the content of digital transmissions over the public Internet by changing some 1s to 0s and some 0s to 1s in a complex pattern that is known only to the sending and receiving parties. At the receiving end of the transmission, the cloak is removed by applying the same algorithm in reverse. *See, e.g.*, White, *supra*, at 394-395. Network engineers describe this technique as operating on a different layer from the application program and enclosing the underlying object code of the transmission in a sealed "envelope" that only the recipient can open. *E.g.*, R. Oppliger, *Security Technologies for the World Wide Web* 103-104 (2d ed. 2003); J. Mairs, *VPNs: A Beginner's Guide* 4-6, 9 (2002). As amici Intellectual Property Professors observe (Br. 5), encryption thereby renders the underlying code "useless gibberish" to third parties who lack the means to open the envelope. But encryption does not alter the fact that Microsoft "supplied" the Windows object code to foreign equipment manufacturers. That is why the object code successfully appeared in unencrypted form on millions of foreign computers—and why Microsoft collected a licensing fee each time.

[20] *See, e.g.*, *Eolas*, 399 F.3d at 1339 ("Without this aspect of the patented invention, the invention would not work at all and thus would not even qualify as new and 'useful.'").

matter how it is expressed at the physical layer. Just as the intangible words of *Moby-Dick* are properly described as a (particularly essential) component of any audio CD or printed book bearing that title, object code designed to implement AT&T's patented invention is a particularly essential component of that invention, no matter what physical medium is used to contain or carry it. The same is true of Microsoft's own analogy to the player piano (*see* Br. 21-22, 41): the intangible arrangement of musical notes in *The Star-Spangled Banner* is a component—indeed the critical component—of a player piano configured to play the national anthem, regardless of whether the arrangement is conveyed to the piano via a perforated roll or some other physical-layer technology, such as an IBM punch card, a machine-readable CD, or a hard drive.[21]

Citing *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113, 1115 (Fed. Cir.), *cert. denied*, 543 U.S. 1003 (2004), Microsoft and its amici further claim that intangible object code cannot be a component of AT&T's invention because it "is design information, analogous to product specifications, or a recipe." Pet. Br. 38; *see also* U.S. Br. 14. This argument, too, is baseless.

In many contexts, a patented device and the instructions for building it are fully distinct, and it would make no sense to describe the latter as "components" of the former, because they are not present in the device. Step-by-step instructions for building integrated circuit chips (*cf. Pellegrini*, 375 F.3d at 1115) are not themselves part of the finished product, nor are cookbooks edible. *Cf.* Pet. Br. 43. But there is no such distinction between "instructions" and

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[21] Of course, no one could patent a book or audio CD of *Moby-Dick* or an old player-piano capable of playing *The Star-Spangled Banner*, nor are the underlying works even entitled to copyright protection in 2007. We cite these examples simply to demonstrate that, regardless of intellectual property protection, ordinary speakers of the English language are perfectly capable of identifying the separate tangible and intangible "components" of a larger system.

"product" in the software context, because the product is a machine that contains and continuously performs the "instructions" expressed in object code. Here, the patented invention is practiced by a computer containing a set of immensely complex instructions for encoding and decoding a potentially infinite variety of voice signals as they arise unpredictably in real time. The instructions prescribed by the object code—instructions to open and close circuits in ever-changing configurations depending on the input—are at all times present within the computer, whether in storage or RAM. *See Eolas*, 399 F. 3d at 1339 (software code is "incorporated as an operating element of the ultimate device"); *see also* Houston Intellectual Property Law Ass'n Br. 7 ("software is capable of becoming incorporated (*i.e.*, stored) within a patented product"); Yahoo! Br. 10 ("[i]nstallation makes the software a part of the computer"). It is thus entirely natural to describe such object code as a component of the resulting device.

II. MICROSOFT "SUPPLIED" INTANGIBLE OBJECT CODE FROM THE UNITED STATES FOR COMBINATION WITH OTHER COMPONENTS ABROAD

A. Microsoft's Arguments On The "Supply" Issue Presuppose The Validity Of Its Erroneous Argument On The "Component" Issue

Once the first question in the petition is answered by giving the term "component" its ordinary meaning, the second question presented is straightforward: Did Microsoft "suppl[y]" the intangible Windows object code to foreign computer manufacturers for "combination" with physical components into devices that, if made in the United States, would infringe AT&T's patent? There is no more natural way to describe what Microsoft has done. To "supply" means to "satisfy a need or desire for" or to "provide or furnish with." *Webster's Third Int'l* 2297 (citing, as an example of usage, "a youngster in school *supplied* me the answer"). Here, the Windows object code is present in the foreign-made computers only because Microsoft "provided" or "furnished"—in a word, *supplied*—it from the United States, via golden master disk or electronic transmission. Thus, if a

shareholder or reporter asked a Microsoft representative whether the company supplied the codec software that foreign Windows users have on their computers, he would answer yes, because that is precisely what Microsoft did. The same answer follows for purposes of interpreting the words of this statute.[22]

Microsoft's contrary arguments assume that the first question presented in the petition (and the last question addressed in Microsoft's brief) has been answered in Microsoft's favor: *i.e.*, that "component" means "*physical* component" (here, a master disk rather than the code it contains). The same is true of the Solicitor General, who claims: "The 'it' that petitioner supplied from the United States is not the same 'it' that is *physically* present in any of the foreign-made computers at issue, *i.e.*, is not a component within the meaning of the statute." U.S. Br. 19 (emphasis added). As Microsoft does throughout its analysis, the Solicitor General is here assuming that only physical things can be components of an invention. That assumption is wrong for the reasons discussed in Point I above.

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[22] The use of the term "supplies" in this context is so obviously appropriate that Microsoft itself conceded in the district court that, when it sends its Windows object code abroad via electronic transmission, it "*supplies* its Windows operating system object code from the United States to certain foreign OEMs." Pet. App. 46a ¶ 7 (emphasis added); *see also* U.S. Br. 4 (stating that Microsoft "provides the Windows object code to foreign computer manufacturers"). Microsoft has likewise referred to software companies as "supplier[s]" of software in other proceedings. *See United States* v. *Microsoft Corp.*, 253 F.3d 34, 75 (D.C. Cir. 2001) (quoting Microsoft's proposed findings of fact as stating that Symantec is "'the leading supplier of utilities such as anti-virus software'"); *see also American Trim, L.L.C.* v. *Oracle Corp.*, 383 F.3d 462, 466 (6th Cir. 2004) ("Oracle is a supplier of business software."); *Dresser-Rand Co.* v. *Virtual Automation, Inc.*, 361 F.3d 831, 837 (5th Cir. 2004) (referring to "the negotiation of *supply agreements* for the hardware and *software components* that were to make up the control system" (emphasis added)); *Specht* v. *Netscape Communs. Corp.*, 306 F.3d 17, 34 n.17 (2d Cir. 2002) (noting that the Uniform Computer Information Transactions Act provides guidelines for "'internet-type' transactions involving the supply of software"); Professor Edward Lee Br. 6.

Microsoft similarly obscures the issue by attempting to differentiate between the "copy" of the object code used in personal computers to practice AT&T's invention and the "copy" that Microsoft supplied from the United States. But the word "copy" appears nowhere in Section 271(f); instead, that provision asks only whether a U.S. company supplied a "component" from the United States. If the component is non-physical, as object code is, the term "copy" could have significance only in describing the different physical-layer media employed for storing, transporting, or using that component. There may be many such media, but the object-code component remains the same. Thus, a foreign purchaser of a personal computer recognizes that the Windows software inside is the *same* Microsoft program his neighbor uses; that it is a core *component* of his computer; and that it was created in and *supplied* from the United States.

Microsoft invokes the Copyright Act in a misguided effort to justify its focus on "copies" (Br. 19 n.4), but a simple comparison of the two statutes in fact undermines Microsoft's position. Congress *did* refer expressly to "copies" in the Copyright Act and defined them as "material objects" in which an intangible "work" is "fixed." 17 U.S.C. § 101. Had Congress wished to limit Section 271(f) to situations where the defendant supplied the same "material objects" that end up in an infringing device abroad, it would have used language to that effect. It is noteworthy that Microsoft and its allies lobbied Congress to take the functional equivalent of that step by specially limiting the term "component" in Section 271(f) to "a tangible item that is itself combined physically with other components to create the combination that is alleged to infringe." Subcomm. on Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary, *Committee Print: Patent Act of 2005*, § 10, at 49 (Apr. 14, 2005) (proposing new section 271(f)(3)). But if such a limitation were warranted as a policy matter, it should be imposed by Congress, not by this Court.

Microsoft also contends (Br. 42) that, before object code "can be 'supplied,' . . . it first must be reduced to some physi-

cal format," and that object code unencased in such a physical format "is not susceptible to transmission." That is true, but it does not support Microsoft's position. *Of course* Microsoft can supply object code to foreign manufacturers only if it first encases the code in a physical-layer container, but the object code itself remains the component supplied. The fact that this component can be moved seamlessly from one container (such as a master disk) to other containers (such as a magnetic surface on a computer hard drive or electrical charges on a RAM chip) merely illustrates the ease with which Microsoft supplies that component from the United States for combination with other components abroad "in a manner that would infringe [AT&T's] patent if such combination occurred within the United States." 35 U.S.C. § 271(f).

By analogy, suppose that a foreign publisher wishes to print and sell ten thousand copies of *Moby-Dick* in its home country. It can supply the ink, paper, and printing presses, but it lacks the most important component of the book: the complete and accurate sequence of Melville's words from the beginning of the novel to the end. It therefore contracts with an American company to convey that word sequence via an electronic transmission. The foreign company downloads the word sequence, chooses a typeface and page format, prints the book, and sells it to consumers. In ordinary speech, the American company has plainly "supplied," from the United States, the intangible text of *Moby-Dick* for combination with the physical components of the printed books, even though the physical format of *Moby-Dick* as it appears in the books is obviously different from the electronic format in which the American firm transmitted it abroad. Likewise, Microsoft has also "supplied," from the United States, intangible object code for combination with various physical components to produce devices abroad that, if manufactured here, would infringe AT&T's patent.[23]

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[23] As before, we cite this example simply to show how the terms "component" and "supply" are ordinarily used in analogous contexts, not

Microsoft claims (Br. 42) that "it is impossible to determine the location from which [software] is supplied" if that software is conceptualized as intangible object code rather than a physical medium containing that code. This is sophistry. Microsoft concedes that it "conceived, wrote, compiled, tested, and debugged Windows in the United States" (Microsoft Ct. App. Br. 4; *see also* U.S. Br. 4) and then shipped the Windows software abroad by combining it with a physical-layer medium in the United States. Indeed, Microsoft had no difficulty acknowledging the U.S. origin of Windows software installed on foreign-made computers when doing so allowed Microsoft to reap $31 million in tax deductions. Microsoft stipulated that its "software development in the United States" satisfied the "domestic production requirement" necessary for master disks containing Windows to be treated as deductible "export property" under 26 U.S.C. § 927(a)(2)(B) (repealed 2000). *Microsoft Corp.* v. *Commissioner*, 311 F.3d 1178, 1182 (9th Cir. 2002). Microsoft's tax deduction for "export property" applied not only to the physical disks exported from the United States, but to all "royalties that Microsoft earned" from licenses to foreign OEMs, including the "royalty for each copy of the [software] distributed in the market or for each computer system the OEMs sold." *Id.* at 1181.

There also can be no doubt that the intangible object code meets the other statutory criteria for liability under both paragraphs (1) and (2) of Section 271(f). Microsoft has never denied that, if object code itself is *a* component of AT&T's invention, it constitutes "a *substantial portion* of the components" of that invention for purposes of paragraph

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to demonstrate anything about how intellectual property law might treat this transmission of *Moby-Dick*, which has long been in the public domain. Although Microsoft notes (Br. 26 n.6) that software may be protected by copyright law, AT&T's invention consists of "new and useful" methods and products and is therefore protected from misappropriation only by patent law, not by copyright. *Microsoft* wrote the object code (which could be protected by copyright) that, when combined with physical computer components, infringed AT&T's patent.

(1). 35 U.S.C. § 271(f)(1) (emphasis added). That alone is enough to establish Section 271(f) liability because it is undisputed that, through its contracts with foreign equipment manufacturers, Microsoft "actively induce[d]" the installation of this object code in computers "outside of the United States in a manner that would infringe the patent if such combination occurred within the United States." *Id.*

Microsoft is independently liable under paragraph (2) as well. The speech-codec object code included with the Windows operating system is "especially made or especially adapted for use in" AT&T's invention; it is "not a staple article or commodity of commerce suitable for substantial noninfringing use"; and Microsoft transmitted it abroad "knowing that such component is so made or adapted and intending that such component w[ould] be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States." 35 U.S.C. § 271(f)(2). Microsoft contends that it cannot be liable under paragraph (2) because "*Windows* is not 'especially made or especially adapted for use'" in AT&T's invention. Pet. Br. 12 n.3 (emphasis added). This is untenable. The question is whether the portion of the Windows object code relevant to speech encoding and decoding, not Windows as a whole, is "especially made or especially adapted for use" in AT&T's invention. It indisputably is, because that portion of the code has no purpose other than the coding and decoding of speech signals.

Finally, it is difficult to discern what Microsoft hopes to gain by arguing that, if it is liable for violating Section 271(f), it is liable, "at most, for a single act of infringement for each master version shipped overseas." Pet. Br. 24. The lower courts held only that Microsoft was *liable* under Section 271(f), and that liability determination is the only question presented for this Court's review. Microsoft appears to be asking the Court to opine on the measure of the *damages* appropriate to compensate AT&T for that violation, but the lower courts never undertook to ascertain damages in this case, and no damages issue is before this Court. Indeed, the

parties have entered into a settlement agreement that prescribes fixed dollar outcomes depending on the course of appellate proceedings about the underlying question of liability. *See* Pet. 9, Pet. App. 42a-43a.

In any event, Microsoft cannot seriously complain about the fairness of making AT&T whole "for each of the tens of millions of foreign-produced copies" (Br. 24). Microsoft itself encouraged its foreign business partners to sell Windows to as many end users as possible, kept close track of how many times they did so, and charged them a royalty each time. It would hardly be unreasonable to take account of Microsoft's royalties in calculating its liability for its intentional infringement of AT&T's patent. *See* 35 U.S.C. § 284 (infringement creates right to "damages adequate to compensate for the infringement"); *General Motors Corp.* v. *Devex Corp.*, 461 U.S. 648, 654 (1983) (successful plaintiff is entitled to "full compensation for 'any damages' he suffered as a result of the infringement" (citation omitted)); *see also Deere & Co.* v. *International Harvester Co.*, 710 F.2d 1551, 1558-1559 (Fed. Cir. 1983); *cf.* Professor Edward Lee Br. 13 ("a court should be allowed to consider, when computing damages for profits lost by AT&T, the acts of copying by Microsoft's licensees that Microsoft's predicate act of infringement facilitated").[24]

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[24] Quite apart from all of the considerations discussed to this point, Microsoft would be liable under Section 271(f) even if, as Microsoft erroneously claims, it could infringe only by supplying a *physical* component abroad. Section 271(f) makes it an act of infringement to supply "components" abroad "in such manner as to actively induce the combination of *such components* outside of the United States." 35 U.S.C. § 271(f)(1) (emphasis added). Microsoft's position depends not just on its artificially narrow construction of "component," but also on the premise that "such," as used in this sentence, means "the same" down to the last molecule. *E.g.*, Pet. Br. 8, 14, 15, 18. But the word "such" cannot bear that weight. Even under the *narrowest* definition of that word—"aforementioned"—it denotes only substantial, not literal, identity between two things. One can satisfy instructions to "buy three eggs and combine such eggs with flour" even if one removes the shells in the process. Here, as with eggs, the essence of software is not the shell it comes in, but the contents, which

B. Microsoft's Invocations Of Legislative History Are Unavailing

As discussed, the ordinary meaning of the statutory text answers both questions in this case. Microsoft nonetheless argues that Section 271(f) should be construed narrowly in light of its "legislative history." Pet. Br. 36 n.10; *see also* U.S. Br. 17. Congress, it says, enacted Section 271(f) only because it "was concerned with the specific facts of *Deepsouth*" (Pet. Br. 36 n.10), where a defendant avoided patent liability even though it had supplied all of the physical "components" of a shrimp deveining machine for assembly abroad. But while *Deepsouth* was indeed the catalyst for the enactment of Section 271(f), "statutory prohibitions often go beyond the principal evil to cover reasonably comparable evils, and it is ultimately the provisions of our laws rather than the principal concerns of our legislators by which we are governed." *Oncale* v. *Sundowner Offshore Servs., Inc.*, 523 U.S. 75, 79 (1998). As noted, software was well-established as a basis for patentable inventions when Congress enacted Section 271(f) in 1984. *See supra* pp. 22-23 & n.16. If Congress had meant to restrict the scope of Section 271(f) to physical components like those at issue in *Deepsouth*, thereby denying meaningful protection to any invention that could be practiced by the use of software, it would have said so in the provision's text.

Indeed, Section 271(f) indisputably creates patent liability for a range of conduct beyond the type of activity addressed in *Deepsouth*. In that case, the defendant supplied *all* of the components of the patented shrimp deveining machine for combination abroad. *See Deepsouth*, 406 U.S. at 524. But a defendant can be liable under Section 271(f)(1) for supplying only "a substantial portion" of the components of a patented invention. A defendant can also be liable under Section 271(f)(2) for supplying a *single* "component" of that invention if (as in this case) the component is especially

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clearly are transferred onto (and thus "combined with") the foreign-made computers.

made for use in the invention, and liability attaches even if that one component is never actually combined abroad, so long as the defendant *intends* that such a combination take place. *See Waymark Corp.* v. *Porta Sys. Corp.*, 245 F.3d 1364, 1367-1368 (Fed. Cir. 2001). Because Section 271(f) thus extends far beyond the facts of *Deepsouth*, that case cannot provide a basis for carving arbitrary exceptions out of the statutory language.

III. MICROSOFT IDENTIFIES NO POLICY BASIS FOR DISREGARDING THE PLAIN MEANING OF THE STATUTORY TEXT

A. Far From Vindicating The "Technology-Neutral" Purposes Of Section 271(f), Microsoft's Position Would Repeal That Provision For Software Components

Microsoft and its supporters argue that the court of appeals' holding offends the "technology-neutral" (U.S. Br. 25) objectives of the statutory scheme by precluding software companies from conducting research and development activities in the United States while exploiting the fruits of those activities abroad through foreign manufacturing operations. In fact, principles of technological neutrality cut against Microsoft here, because it is Microsoft's position that would single out software for special treatment by arbitrarily exempting it from the scope of Section 271(f).

As an initial matter, the court of appeals' holding does not preclude software designers from conducting research and development in the United States as one step towards manufacturing abroad a product that would violate U.S. patents if manufactured here. For example, nothing in the court of appeals' decision precludes a company in Microsoft's position from providing foreign companies with technical specifications—the software equivalent of blueprints—for particular types of software programs.[25] What Microsoft

[25] Once the "requirements" of a desired program—*i.e.*, what the program should do—have been established, software engineers create technical specifications (often called the "design"), the purpose of which is "to create a model of software that will implement all customer requirements

may *not* do is what it did here: supply the actual object code that will itself be combined with hardware to create devices that would infringe patents if manufactured in the United States. The Solicitor General contends that it would "upset the balance struck by Congress" to encourage software companies like Microsoft, which balk at paying royalties to inventors, to "sell[] incomplete work product" abroad in the form of design specifications rather than ready-to-install object code. U.S. Br. 26. But permitting such companies to free-ride on others' inventions by selling *complete* work product for the most critical component in those inventions—finished object code—would strike no balance at all: it would repeal Section 271(f) for the software industry.

Indeed, a repeal is precisely what Microsoft and its allies seek. First, they are actively lobbying for legislation that, in its most aggressive form, would eliminate Section 271(f) outright. *See* Patent Reform Act of 2006, S. 3818, 109th Cong. § 5(f) (2006); Eli Lilly Br. 14-15 (stating that Microsoft's coalition is pursuing "sweeping changes to U.S. patent law," including a repeal of Section 271(f)). Second, as a hedge, they have asked this Court to issue the functional equivalent of a repeal for the software industry in this case.

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correctly." Pressman, *supra*, at 250. Design specifications are not themselves software, but rather representations of the software's structure: "the preliminary blueprint from which software is constructed," *id.* at 254. Completion of the design specification "sets the stage for construction," which is the actual generation of source code. *Id.* at 227; *see also id.* at 321 (stating that the later phase of software design, called "component-level design," represents the program "in sufficient detail to guide in the generation of programming language source code"). Once generated, the source code must be compiled into machine-executable object code and actually run on a computer for testing and "debugging" (removal of errors identified during testing). *See Computer Assocs. Int'l, Inc.* v. *Altai, Inc.*, 982 F.2d 693, 698 (2d Cir. 1992). As the court of appeals correctly held, this case does not involve the transmission overseas of software "designs" or specifications that would instruct foreign engineers on how to code Windows themselves. *See* Pet. App. 8a. Rather, Microsoft shipped the final software component—the program's object code—for incorporation into foreign-made computers.

On this the Court should make no mistake: the consequence of Microsoft's position is that, with few if any exceptions, no software "component" could ever be "supplied" from the United States in a manner that would trigger Section 271(f).

As Microsoft acknowledges (albeit in a footnote), *every* provision of object code to an end user necessarily involves transferring that code from one physical-layer container to another. *See* Pet. Br. 4 n.2 (conceding that "the 'installation' process itself involves an act of duplication"). If Microsoft were correct that only the physical medium containing the object code qualifies as a component "supplied" from the United States—such that the "supply" of object code is interrupted whenever the code is transferred to a new physical medium—the installation process would almost always generate a new "copy" that (under Microsoft's theory) is not "supplied" from the United States. Microsoft could avoid liability even if it directly mailed each individual foreign customer a CD containing all of the relevant object code, because each customer would normally install the object code onto a hard drive and, in the process, transfer the object code from one physical medium (the pits and lands of a portable CD) to another (the magnetic surface on hard drives).

In the district court, Microsoft tried to avoid that conclusion by "acknowledg[ing] that if individual disks with the infringing Windows object code were sent abroad for installation into each foreign-assembled computer (rather than one golden master disk), Microsoft would be liable for infringement under Section 271(f)." Pet. App. 36a n.7; J.A. 26. And the Solicitor General makes the same assertion even now (Br. 25 n.2). But these attempts to seem moderate run headlong into Microsoft's own core legal rationale, which is that every act of "copying" ("installation") outside the United States creates a new software component that was not "supplied" from the United States. That is presumably why Microsoft has now retreated from any suggestion that it would be liable if it had sent millions of CDs containing the object code needed to practice AT&T's invention to millions

of foreign end users for downloading onto their individual hard drives.[26]

Microsoft nonetheless claims that Section 271(f) "might" preclude a company in its position from shipping "software-encoded disks" to foreign manufacturers for physical incorporation into individual computers (Pet. Br. 28), but only in the atypical case (such as certain "video game systems") where the end user must "run the computer program directly from the U.S.-supplied disk" rather than downloading it onto the computer's hard drive (*id.* at 37 n.11). Even on its own terms, this effort to preserve relevance for Section 271(f) in the software industry has vanishingly narrow significance. End users typically download programs from a disk onto a hard drive before running them, and Microsoft (and similar companies) could easily ensure that end users follow that step for all programs if that were all that is needed to avoid liability under Section 271(f).

In addition, under the logic of Microsoft's argument, a company in Microsoft's position would not "supply" foreign end users with the same "copy" of the object code actually employed to practice AT&T's invention even if Microsoft sent all of those end users the *hard drives themselves*, fully equipped with the code. That is because, before a computer can perform the operations of a software program, it must call up the object code from a storage medium (such as a hard drive or CD) and incorporate it into arrangements of

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[26] The Solicitor General, on the other hand, continues to argue that if Microsoft had "sent copies of its Windows software from the United States to a foreign country and those copies were loaded onto computers, [it] would likely be liable under Section 271(f) for each such infringing copy." U.S. Br. 25 n.2. Again, however, "loading" software from a CD onto a computer's hard drive inevitably requires converting code from its physical manifestation as pits and lands on the CD into a new physical manifestation as magnetic properties on the hard drive (*cf. id.* at 15). The Solicitor General offers no principled reason for treating the different physical manifestations of object code on a *CD* and a hard drive as the same component while treating the different physical manifestations of object code on the *master disk* and a hard drive as different components.

electrical charges in its RAM.[27] Only once the code is so embodied in the RAM circuitry can the computer's central processor perform the program's functions (here, speech encoding and decoding operations). On Microsoft's theory, the "copy" of the Windows object code embodied in the computer's RAM would be different from the "copy" physically embodied in the storage medium. For that matter, even the electric charges in the RAM circuitry discharge over time and must be "refreshed"—by adding new electrons that are different from those previously discharged—"thousands of times per second."[28]

One way or another, Microsoft's legal rationale would allow it to claim that, no matter how it distributes software abroad, it never "supplies" the *same* software component that foreign customers actually use to practice AT&T's invention—even though there is obviously no other way for this staggeringly complex compilation of object code to end up in the RAM of millions of foreign customers' computers. Microsoft's angels-on-a-pin metaphysics is reminiscent of the claim attributed to Heraclitus that "you would not step twice into the same river" because other waters are continually flowing in.[29] But ordinary speakers of the English language find it perfectly natural to say that Huck and Jim

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[27] *See* Walters, *supra*, at 41 ("Programs that are executing—actually in use—are loaded into [RAM] because the silicon chips that comprise [RAM] can read and store data much faster than can the other principal kind of storage, hard disks."); Jeff Tyson, *How Computer Memory Works*, *at* http://computer.howstuffworks.com/computer-memory.htm (visited Jan. 23, 2007).

[28] Jeff Tyson & Dave Coustan, *How RAM Works*, *at* http://computer.howstuffworks.com/ram.htm (visited Jan. 23, 2007); *see also* White, *supra*, at 49. Under Microsoft's position, therefore, the functional software "component" is never the same from one moment to the next *even while it is being used*. *See, e.g., Apple Computer, Inc.* v. *Formula Int'l, Inc.*, 594 F. Supp. 617, 622 (C.D. Cal. 1984) ("It is a property of RAM that when the computer is turned off, the copy of the programs recorded in RAM is lost."); White, *supra*, at 49.

[29] Plato, *Cratylus* 402a, *quoted in* G.S. Kirk & J.E. Raven, *The Presocratic Philosophers* 197 n.218 (1971).

rafted on the same Mississippi River on successive days, despite the differences in water molecules. So, too, do ordinary speakers find it perfectly natural to say that Microsoft "supplied" the Windows object code to its foreign customers abroad, and that the foreign customers sold computers that run "Microsoft Windows" software made in the United States, not "Sony Windows" made in Japan or "Siemens Windows" made in Germany.

In sum, Microsoft's position would treat the software industry differently from all other industries by precluding any meaningful application—indeed, any application at all—of Section 271(f) to the supply of software components abroad. It is Microsoft and its allies, not the court of appeals, that would thereby thwart principles of "technological neutrality." And there is absolutely no indication that Congress meant to treat software any differently from any other components of patented inventions, much less that it intended to fence software off from the protections of Section 271(f) entirely.

B. The Presumption Against Extraterritoriality Is Inapplicable

In another effort to escape the statutory text, Microsoft relies heavily on the judicial "presumption against the extraterritorial application of U.S. law" (Pet. Br. 30). That reliance is misplaced for multiple independent reasons.

First, the presumption is simply inapplicable because Microsoft is liable under Section 271(f) not for "extraterritorial" conduct, but for conduct performed domestically: shipping its U.S.-developed, U.S.-tested Windows software from the United States. Section 271(f)(2) makes this point abundantly clear. Because that provision predicates liability on the "inten[t]" of a U.S. firm in shipping a "component" abroad, Microsoft is liable no matter what actually happened abroad and, in particular, *whether or not* foreign manufacturers ultimately combined that component into devices that would infringe AT&T's patent if made in the United States. *See Waymark Corp.*, 245 F.3d at 1367-1368. As noted, the proper assessment of *damages* may well turn on the extent

to which Microsoft "actively induce[d]," 35 U.S.C. § 271(f)(1), or "intend[ed]," *id.* § 271(f)(2), the proliferation of infringing devices abroad. But even proof on that damages issue would require no foreign discovery, since Microsoft kept track of its foreign partners' activities and charged them royalties that it entered into its books in the United States. Holding Microsoft liable under that provision no more entails the "extraterritorial" application of the patent law than would holding a criminal defendant liable under U.S. law for mailing an explosive device from the United States with the intent to harm a target abroad. *See* 18 U.S.C. § 1716(j)(2).

Second, even if Microsoft's activity in this case *had* an extraterritorial dimension, the "presumption" would be inapplicable because, where it applies at all, it operates only to break interpretive ties when a statute is ambiguous as to its geographic scope. *See, e.g., EEOC* v. *Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) (stating that the presumption against extraterritoriality applies when ascertaining "'unexpressed congressional intent'" (quoting *Foley Bros., Inc.* v. *Filardo*, 336 U.S. 281, 285 (1949)). Because, for the reasons discussed in Points I and II above, the text of Section 271(f) speaks directly to the questions presented here, there is no ambiguity for any "presumption" to resolve.

Third, it would be especially perverse to apply the presumption against extraterritorial application to a statutory provision that, like this one, Congress enacted for the purpose of *overcoming* the application of that very presumption. Congress passed Section 271(f) precisely to counteract the *Deepsouth* Court's reliance on the presumption against extraterritoriality to foreclose the type of liability that Section 271(f) creates.[30] Thus, the premise of Section 271(f) is that,

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[30] *See Deepsouth*, 406 U.S. at 531. Nothing in the reasoning of *Deepsouth* supports Microsoft's claim that applying Section 271(f) in these circumstances would involve an "extraterritorial" application of U.S. law (and it would not, for the reasons discussed in the text). In *Deepsouth*, because Section 271(f) had not yet been enacted, the U.S. company could face no liability for infringing a combination patent unless Section 271(a) had genuinely extraterritorial application, in the sense that a foreign com-

in the circumstances defined by that provision's plain language, U.S. patentees should *not* have to rely exclusively on foreign patent protections, which would require the patentee to assume prohibitive costs to prosecute and enforce patents in scores of foreign jurisdictions, all simply to address *domestic* activity by U.S. companies like Microsoft that supply components of the patented invention from the United States. Given that backdrop, applying a judge-made "presumption" to reweigh the policy balance that Congress struck when writing the language of Section 271(f) would hardly give effect to any presumed congressional intent; instead, it would usurp Congress's role.[31]

The Solicitor General's contrary argument (*see* U.S. Br. 28) relies on two cases that do not begin to support it. The Solicitor General's reliance on *Smith* v. *United States*, 507 U.S. 197 (1993) (U.S. Br. 28), is particularly baffling, since the statute in that case—the Federal Tort Claims Act—expressly *foreclosed* any extraterritorial application. *Id.* at 201 ("[T]he FTCA's waiver of sovereign immunity does not apply to '[a]ny claim arising in a foreign country.'" (quoting 28 U.S.C. § 2680(k))). Thus, this Court held that the presumption against extraterritoriality was "doubly fortified by the language of this statute." *Id.* at 204 (quoting *United States* v. *Spelar*, 338 U.S. 217, 222 (1949)). The exact opposite is true of Section 271(f): it was enacted to *reverse* this Court's reliance on the presumption against extraterritoriality in *Deepsouth*. *See* 406 U.S. at 531.

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pany could violate U.S. patent laws (or a U.S. company could "induce" such a violation under Section 271(b)) through assembly of an infringing device abroad. The Court rightly noted that Congress had not revealed an intention to create liability in those circumstances.

[31] In claiming that U.S. patent law is "territorially limited," Microsoft tellingly relies entirely on statements that *predate* the enactment of Section 271(f). *See* Pet. Br. 31 (citing *Dowagiac Mfg. Co.* v. *Minnesota Moline Plow Co.*, 235 U.S. 641 (1915); *Brown* v. *Duchesne*, 60 U.S. (19 How.) 183 (1857)); *see also* U.S. Br. 27 (same).

F. Hoffmann-La Roche Ltd. v. *Empagran S.A.*, 542 U.S. 155 (2004), is likewise inapposite. Far from adopting a generalized presumption against the extraterritorial application of U.S. law, the Court there noted only that "it ordinarily construes *ambiguous* statutes to avoid *unreasonable* interference with the sovereign authority of other nations." *Id.* at 164 (emphasis added). It thus rejected an interpretation of U.S. law that would have vested "worldwide subject matter jurisdiction" in the U.S. courts for "any foreign suitor wishing to sue its own local [foreign] supplier" for foreign injuries, "provided that a different plaintiff had a cause of action against a different firm for injuries that were within U.S. . . . commerce." *Id.* at 166 (internal quotation marks omitted). Congress, the Court held, could not have intended that bizarre result: "Why should American law supplant, for example, Canada's or Great Britain's or Japan's own determination about how best to protect Canadian or British or Japanese customers from anticompetitive conduct engaged in significant part by Canadian or British or Japanese or other foreign companies? . . . . We can find no good answer to the question." *Id.* at 165-166. Here, in contrast, it would hardly be "unreasonable" to apply Section 271(f) in this suit brought by one U.S. company against another U.S. company for actions taken within the United States.

Fourth, applying any presumption against extraterritoriality would be particularly pointless from a policy perspective, because Microsoft cites no respect in which the application of Section 271(f) would actually conflict with any foreign nation's sovereign prerogative. As Microsoft acknowledges (Br. 30), the presumption against extraterritoriality "serves to protect against unintended clashes between our laws and those of other nations which could result in international discord." *Arabian Am. Oil*, 499 U.S. at 248. Neither in this Court nor below has Microsoft identified any law of any foreign nation that poses any conflict with the application of Section 271(f) here. Certainly no foreign law *requires* Microsoft to infringe AT&T's patent by shipping Windows object code from the United States to foreign computer manufacturers without paying AT&T a reasonable royalty for ex-

ploiting its invention.[32] It is also noteworthy that no foreign government has submitted any objection to the application of Section 271(f) in this case, whereas several foreign governments *did* file amicus briefs in *Empagran* urging the result the Court ultimately reached. *See* 542 U.S. at 167-168. And the Solicitor General, who represents the Executive Branch before this Court, nowhere suggests that this case implicates the United States' obligations under international law or the President's authority over foreign relations.[33]

The mere fact that countries have different patent-law regimes does not create a conflict between those patent re-

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[32] *See Hartford Fire Ins. Co.* v. *California*, 509 U.S. 764, 799 (1993) ("Since [petitioners] do not argue that British law requires them to act in some fashion prohibited by the law of the United States, . . . or claim that their compliance with the laws of both countries is otherwise impossible, we see no conflict with British law."); *cf. Steele* v. *Bulova Watch Co.*, 344 U.S. 280, 285-286 (1952) ("[T]he United States is not debarred by any rule of international law from governing the conduct of its own citizens . . . in foreign countries when the rights of other nations or their nationals are not infringed." (internal quotation marks omitted)). The facts of *Steele* are instructive. This Court there held that a U.S. district court could hear a Lanham Act claim against a trademark infringer whose infringing products were sold only in Mexico—a situation that certainly raises greater extraterritoriality concerns than holding Microsoft liable for the U.S.-based development, testing, debugging, and shipping of software. The Court even contemplated the possibility of a U.S. court enjoining the U.S. defendant "to cease or perform acts" occurring entirely in Mexico, so long as there was "no conflict which might afford [the party] a pretext that such relief would impugn foreign law." *Steele*, 344 U.S. at 289. In so holding, the Court rejected the dissent's view—echoed by Microsoft here—that an unspecified and unsubstantiated risk of "conflict with the laws and practices of other nations" warranted exempting U.S. parties from the reach of a U.S. statute. *Id.* at 258-259 (Reed, J., dissenting).

[33] If anything, faithful enforcement of Section 271(f) comports with the international goal of fighting cross-border piracy by ensuring that countries maintain "expeditious remedies to prevent infringements and remedies which constitute a deterrent to further infringements." Agreement on Trade-Related Aspects of Intellectual Property Rights, Including Trade in Counterfeit Goods, Apr. 15, 1994, art. 41(1), *in* Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 33 I.L.M. 1197, 1213-1214 (1994).

gimes and Section 271(f). Section 271(f) merely defines a category of U.S.-based behavior as infringing of U.S. patents; it does not purport to give any individual a monopoly over the making of any invention in a foreign country. Nor has AT&T ever contended, contrary to Microsoft's implication, that it was an "act of infringement" to "assemble devices overseas" (Pet. Br. 33). The foreign computer manufacturers that combined the Windows object code into their foreign-made computers have nothing to fear from the U.S. patent law, provided that the resulting devices are not "import[ed] into the United States" (35 U.S.C. § 271(a)). And Microsoft cites no basis for concern that any foreign court would hold *it* liable for the same conduct underlying Microsoft's Section 271(f) violation (much less deny Microsoft the ordinary right of any defendant to offset damages in a prior case from damages assessed in a subsequent case). Microsoft's claim of "overlapping and duplicative liability" (Pet. Br. 31 n.8) is therefore neither substantiated nor realistic.

Finally, there is no merit to Microsoft's related policy argument that, to vindicate their rights abroad, patent-holders in AT&T's position should simply rely on patent protections under foreign law rather than on U.S. patent law. Again, Congress enacted Section 271(f) because it understood that foreign patent protections are sometimes weaker than their U.S. counterparts, and because it wished to spare U.S. patent-holders from the considerable expense of obtaining patent protections in dozens of foreign jurisdictions. Microsoft's policy argument could be made whenever Section 271(f) is invoked, because that provision necessarily entitles U.S. patent-holders to seek redress for U.S.-based actions as an alternative to seeking redress for foreign acts under foreign patent-law protections. The argument thus quarrels not so much with the application of Section 271(f) in this case as with Congress's decision to enact it in the first place.[34]

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[34] Judge Learned Hand, faced with the question whether a copyright infringer was liable for the shipping of film negatives abroad from which a copyrighted film could be reproduced, noted that it was irrelevant

C. Microsoft's "Outsourcing" Arguments Are Without Merit

Microsoft and its supporters argue (*e.g.*, Pet. 20; U.S. Br. 26; Business Software Alliance Br. 10, 12; Intel Br. 19) that the Court should limit the scope of Section 271(f) on the theory that construing it as the court of appeals did would lead companies in Microsoft's position to relocate their operations abroad. But even if policy arguments could trump the plain meaning of statutory text, which they cannot, *this* policy argument is unpersuasive on the merits.

As an initial matter, arguments about supposed "outsourcing" incentives, like Microsoft's other policy-based arguments, take issue less with the court of appeals' decision than with Congress's threshold decision to enact Section 271(f). No matter how it is interpreted, that provision has always presented the hypothetical risk that "component" suppliers will move their operations offshore. *See* D. Chisum, *Normative and Empirical Territoriality in Intellectual Property: Lessons from Patent Law*, 37 Va. J. Int'l L. 603, 607 (1997) (calling for repeal of Section 271(f)). Congress nonetheless decided to protect U.S. patentees from unfair competition by U.S. "component" suppliers. To the extent that faithful application of Section 271(f) may someday have undesirable economic consequences, Congress is more than capable of fine-tuning it to strike a different balance between inventors and those who wish to free-ride on others' innovations. While Congress has considered such fine-tuning, it has not changed the law yet.[35]

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whether the copyright holder would be entitled to recover under foreign law. *See Sheldon* v. *Metro-Goldwyn Pictures Corp.*, 106 F.2d 45, 52 (2d Cir. 1939), *aff'd*, 309 U.S. 390 (1940). Although *Sheldon* arose under the copyright law, not the patent law, it supports the court of appeals' conclusion here that the consequences under U.S. law for the U.S.-based actions of U.S. companies do not turn on foreign law. Pet. App. 6a n.2.

[35] Microsoft's argument on this point also ignores the undisputed ability of any U.S. company, under any interpretation of Section 271(f), to supply work product (such as technical specifications) from earlier stages of the software-development process. *See supra* p. 36 & n.25.

Microsoft's policy argument also focuses narrowly on the welfare of U.S.-based *component* suppliers, a myopic perspective that—though favorable to Microsoft and its allies—slights the fuller set of policy interests Congress sought to accommodate by enacting this statute. Section 271(f) encourages greater innovation in the U.S. by ensuring effective intellectual property protection for inventors, and all software developers (including Microsoft) benefit from that protection. As one senior U.S. executive explained:

> The software industry could achieve cost savings by moving its development and production facilities overseas, but it has chosen to remain in the United States and has flourished here, in no small part because the copyright, trade secret and judicial processes in the United States provide[] strong and effective protection for the intellectual property content of software products. There is no justification for letting them enjoy the benefit of our strong IP system for their own products while, at the same time, they are allowed to avoid exposure to other companies' patents when those same products are exported.[36]

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[36] *Committee Print Regarding Patent Quality Improvement: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary*, 109th Cong., 1st Sess. 202 (2005) (statement of Jack Haken, Vice President, Intellectual Property & Standards, U.S. Philips Corporation). *Amicus* Business Software Alliance acknowledges (Br. 9) that "[s]oftware and computer companies based in the United States rely on the strength of United States [patent] law" to protect their own discoveries, yet claims (Br. 10) that Section 271(f) disadvantages U.S. software companies compared to foreign companies. But there is no disparity in treatment; a foreign company can no more use the U.S. market to develop "components" of a U.S.-patented invention for combination abroad than can a U.S. company. And U.S. companies may set up manufacturing facilities in other countries just as foreign companies do, provided that they do not ship "components" of U.S.-patented inventions for combination with other components—or, if they do, that they license the technology from the patentee, like any other U.S. company seeking to exploit a U.S. patent.

The lower courts' approach also removes the artificial incentives that Microsoft's position would give to *end-product* manufacturers (in this particular case, computer manufacturers) to locate their operations offshore in order to exploit Microsoft's proposed software exception to Section 271(f). Under Microsoft's position, any manufacturer that depends on U.S.-developed software gains substantial savings (*i.e.*, avoidance of patent royalties) by locating its manufacturing facilities abroad. A proper construction of Section 271(f) levels the playing field among jurisdictions by ensuring that patent-related costs will be the same wherever the manufacture occurs. *See* 130 Cong. Rec. 28,069 (1984), *reprinted in* 1984 U.S.C.C.A.N. 5827 (stating that Section 271(f) was enacted "to avoid encouraging manufacturing outside the United States").[37] As a result, U.S. business leaders who oppose a repeal of Section 271(f) "passionately argue that Section 271(f) protects [certain] kinds of jobs (such as assembly jobs) from foreign outsourcing." *Amendment in the Nature of a Substitute to H.R. 2795, the "Patent Act of 2005": Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary*, 109th Cong., 1st Sess. 68 (2005) (statement of Phil Johnson, Chief Patent Counsel, Johnson & Johnson).

There is therefore "a sharp difference of opinion within the IP stakeholder community as to whether, in the future, Section 271(f) will result in a net increase or decrease in U.S. jobs." *Id.* More generally, there is no consensus about the net effect of Section 271(f) on U.S. economic interests. The responsibility for resolving that empirical controversy rests with Congress, not this Court.

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[37] The Solicitor General incorrectly asserts (Br. 27 n.3) that this statement applied only to a "different provision" of the same bill. Congress was clear that the bill contained "*two major changes* in the patent law to avoid encouraging manufacturing outside the United States," the "second" of which was Section 271(f). 130 Cong. Rec. 28,069, *reprinted in* 1984 U.S.C.C.A.N. 5827-5828 (emphasis added); *see also Bayer AG* v. *Housey Pharms., Inc.*, 340 F.3d 1367, 1374 (Fed. Cir. 2003).

CONCLUSION

The judgment of the court of appeals should be affirmed.

Respectfully submitted.

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MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Writ Of Certiorari
To The United States Court Of Appeals
For The Federal Circuit

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RULE 29.6 STATEMENT

The corporate disclosure statement included in the petition for a writ of certiorari remains accurate.

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REPLY BRIEF FOR PETITIONER

This case comes to this Court on stipulated facts. Although the legal conclusions to be drawn from those facts are for this Court, the facts themselves are binding. *H. Hackfeld & Co.* v. *United States*, 197 U.S. 442, 446 (1905). It thus bears reiterating at the outset what the essential, and indisputable, facts of this case are: "Microsoft makes a limited number of 'golden master' disks in the United States on which the machine-readable object code for the Windows operating system software is stored." Pet. App. 45a ¶ 4. Foreign computer manufacturers then "make . . . copies of the object code" (*id.* at 46a ¶ 9), and "install the *foreign-made copies* of Windows operating system software onto computers." *Id.* at 45a ¶ 5 (emphasis added). The golden master disk "itself is never installed on a computer that is then sold." *Ibid.* Rather, the golden master disk is used by the foreign manufacturer to create "*foreign replicated object code*" (*id.* at 46a ¶ 10 (emphasis added)), which "is then installed on computers that are sold." *Id.* at 45a ¶ 5.[1]

This case thus essentially presents a single overarching question: Whether, by exporting the golden masters containing machine-readable object code from which foreign-replicated copies were made in foreign countries, installed overseas in foreign-made computers, and sold to foreign end-users, Microsoft "supplie[d] . . . from the United States" the "components of a patented invention" in a manner that induced "the combination of such components outside of the United States." 35 U.S.C. § 271(f). AT&T has offered two

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[1] Microsoft also sends electronic transmissions of object code abroad, but, as AT&T has acknowledged, those transmissions are legally indistinct from golden master disks. Resp. Dist. Ct. Br. 3 n.1. This brief, therefore, will generally use the term "golden master" to refer to both the disks and the electronic transmissions. *See* note 4, *infra*.

mutually exclusive theories to support liability under that provision.

At times, AT&T has argued that the golden masters themselves were the relevant "components," and that foreign-made *copies* of the machine-readable object code could be deemed "supplie[d] . . . from the United States" because, as the Federal Circuit held, "for software 'components,' *the act of copying is subsumed in the act of 'supplying,'* such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." Pet. App. 6a (emphasis added); *see also* Resp. Dist. Ct. Br. 7, 10 (arguing that Microsoft supplied "software on a computer-readable medium (such as the golden masters)"—a "[d]evice or [a]pparatus" that "defin[es] structural and functional interrelationships between the software and the computer"); Tr. Dist. Ct. Oral Arg. 29 (Dec. 12, 2003) (arguing that "the software at issue here" sufficed as a "component" because it was "affixed to some *tangible medium*") (emphasis added).

At other times, AT&T has argued that the relevant component supplied by Microsoft "is not the disk itself, the tangible medium to which the software is affixed," but instead is "the software . . . the object code on that disk," untethered from the physical plane (Tr. Dist. Ct. Oral Arg. 24-25 (Dec. 12, 2003))—or, to use AT&T's more recent formulation, "a binary sequence of numbers that 'lacks physical existence.'" Second Supp. Cert. Br. 4. On this theory, wherever Windows "successfully appear[s]" in a computer, Microsoft has supplied it from the United States. Resp. Br. 26 n.19.

Because AT&T advanced two alternative theories as to what constituted the relevant "component" in the courts below, Microsoft has addressed both theories and has demonstrated that both are meritless: the first because the "components" "combin[ed]" overseas—foreign-made *copies* of the Windows golden masters—were not "supplie[d] . . . from the

United States" (Pet. Br. 13-33); and the second because what Microsoft did supply from the United States—golden masters of the Windows object code—are not themselves and do not contain "components" that were "combin[ed]" overseas (*id.* at 33-44). Those two points answer the two questions presented in Microsoft's petition for a writ of certiorari and restated without material change in its merits brief. *See* Pet. i, Pet. Br. i. And irrespective of the order in which they are addressed, the judgment of the court of appeals should be reversed for either or both reasons.

In this Court, AT&T has all but abandoned the first of its arguments, which was the core rationale of the decision below—that "for software 'components,' the act of copying is subsumed in the act of 'supplying.'" Pet. App. 6a. AT&T now focuses instead on its alternative argument—that Microsoft supplied the Windows object code untethered from any "physical layer" of a computer-related invention, and that such abstract information constitutes a "component" of AT&T's claimed apparatus. But this latest iteration of AT&T's theory fares no better than the now-forsaken ground upon which it prevailed below. If what is in issue is *only* "a binary sequence of numbers that lacks physical existence," as AT&T now claims, then Microsoft has not violated Section 271(f) because abstract information—separated from any physical, machine-readable medium—cannot constitute a "component of a patented invention" that is "combin[ed]" with anything under Section 271(f). If it could, liability under Section 271(f) would necessarily extend to the export of all other abstract knowledge, designs, information, and instructions, thereby massively enlarging the extraterritorial scope of U.S. patents. And because the software components actually combined to form AT&T's patented invention—the physical, machine-readable versions of the Windows program manufactured abroad, without which the foreign-manufactured computers could not function—are not "sup-

plie[d] . . . from the United States," Microsoft is not liable under Section 271(f).[2]

I. THE FOREIGN-MADE COPIES OF THE MACHINE-READABLE WINDOWS OBJECT CODE WERE NOT "SUPPLIE[D] . . . FROM THE UNITED STATES"

1. AT&T argues that "[h]ad Congress wished to limit Section 271(f) to situations where the defendant supplied the same 'material objects' that end up in an infringing device abroad, it would have used language to that effect." Resp. Br. 30. But Congress did *precisely* that. And if Congress wishes to do more, it may certainly do so.

Section 271(f) makes it unlawful to "suppl[y] . . . from the United States" the "components of a patented invention" if "*such* components" are combined overseas to practice the claimed invention. The adjective "such" in this construction means that the "components" it introduces are the *same* as the "components" previously referred to in the same sentence. BLACK'S LAW DICTIONARY 1473 (8th ed. 1999) ("[t]hat or those; having just been mentioned"). Thus, Section 271(f) prohibits supplying components if *those* components are combined overseas. The Court has previously

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[2] Contrary to AT&T's suggestion (Resp. Br. 17), in no event would AT&T's latest shift in tactics—its sudden willingness to forsake the argument upon which it prevailed below—warrant dismissal of the writ of certiorari. The parties stipulated that the "components" here at issue are "the 'golden master disks' and the encrypted transmissions of Windows object code." Pet. App. 47a ¶ 10. Under that stipulation, the record in this case "'fairly present[s]'" the "question of general application" whether, as the Federal Circuit held, foreign-made copies of a physical component may be "deemed supplied from the United States." Resp. Br. 17 (quoting *Rogers* v. *United States*, 522 U.S. 252, 259 (1998) (plurality op.)); Pet. App. 4a. The Federal Circuit's decision also raises the important and recurring question whether information in the abstract is a "component" under Section 271(f). AT&T cannot avoid review of either question by disavowing its own stipulation or abandoning the reasoning of the Federal Circuit.

given "such" just that definition in construing other statutes. *See, e.g., United States* v. *Gooding*, 25 U.S. (12 Wheat.) 460, 477 (1827) (Story, J.) ("But it is sufficient to say, that the word 'such' has an appropriate sense, and can be reasonably referred only to the ship or vessel previously spoken of .... If we were to adopt any other construction, we should read the words as if 'such' were struck out ....").[3]

AT&T contends that the word "such" "denotes only substantial, not literal, identity between two things," Resp. Br. 34 n.24, but cites no authority for that proposition, because it is wrong. *Black's* gives the following example: "a newly discovered Fabergé egg will be on auction next week; such egg is expected to sell for more than $500,000." *Supra*, at 1473. Obviously, in this example, it is nonsensical to say that "a substantial[ly] ... identi[cal]" egg will be sold at auction. Rather, the *same, identical* egg—"*that* egg"—will be sold. And "such" carries such—the same—sense in Section 271(f).

AT&T's position selectively reads the word "such" out of the statute (conveniently, just two of the eight times that word is used in Section 271(f)), in derogation of the familiar principle that courts will give effect to each word of a statute. *See Cooper Indus., Inc.* v. *Aviall Servs., Inc.*, 543 U.S. 157, 167 (2004). Under Microsoft's construction, by contrast, each of the statutory terms has work to do, none is superfluous, and the statute works harmoniously as a whole.

The statutory phrase "such components" is fatal to AT&T's claim that Microsoft "supplied" components *from the United States*. It is undisputed that the *only* things Mi-

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[3] *See also* HENRY WEIHOFEN, LEGAL WRITING STYLE 37 (2d ed. 1980) ("The adjective 'such' sometimes serves a useful purpose, as where it saves having to repeat a concept that cannot be referred to in a word or two. In statutes and regulations, for example, it may be necessary to make clear that the second reference is to exactly the same concept mentioned previously. The word 'such' is the simplest way to do so.").

crosoft supplied from the United States were the golden masters, which were *never* combined with other parts to form AT&T's patented invention.[4] And the object code conveyed by those media also was not combined overseas; rather, "foreign replicated" *copies* of the object code were made in foreign countries, by foreign manufacturers, for installation on (and combination with) foreign computers for sale to foreign end-users.

2. In this Court, AT&T tries to say as little as possible about the foreign-replicated *copies* of Windows that were installed on foreign-made computers for sale to foreign end-users. *See* Resp. Br. 30. AT&T instead uses clumsy euphemisms in an effort to avoid discussing the copies that indisputably were made overseas. *See, e.g.*, Resp. Br. 9-10 ("[t]he code is then *transferred* onto the hard drives of foreign-manufactured computers") (emphasis added). And where AT&T does directly address the *copies* of Windows that are made overseas, its arguments make little sense.

AT&T first says that "the word 'copy' appears nowhere in Section 271(f); instead, that provision asks only whether a U.S. person supplied *a* 'component' from the United States." Resp. Br. 30 (emphasis added). But under the statute, that same component—"such component"—must be "combin[ed]" with others in a foreign country. A *copy* made in a foreign country is not the same thing that was supplied from

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[4] The strained—and incorrect—reading of the stipulated facts advocated by *amicus* BayhDole25, Inc., which argues that the same copy—such copy—of the machine-readable object code sent from the United States by electronic transmission is installed on foreign-assembled computers, was adopted by neither of the parties and by neither of the courts below, and thus is not an available alternative ground for affirmance. *See Lytle* v. *Household Mfg., Inc.*, 494 U.S. 545, 551 n.3 (1990) (Court may not affirm on alternative ground that "was not presented to either court below, nor is . . . supported by arguments in the record"); *see also United Parcel Serv., Inc.* v. *Mitchell*, 451 U.S. 56, 60 n.2 (1981) (Court need not consider arguments raised only by an *amicus curiae*).

the United States. It is well-established that copying and supplying are legally distinct acts, contrary to the Federal Circuit's conclusion that they are the same thing. *See* 17 U.S.C. § 106 (granting copyright holders six exclusive and distinct rights, including the right to reproduce (*i.e.*, copy) a work and the right to distribute (*i.e.*, supply) a work).

Apparently recognizing as much, AT&T resorts to legerdemain: "[i]f the component is non-physical, as object code is, the term 'copy' could have significance," AT&T asserts, "only in describing the different physical-layer media employed for storing, transporting, or using that component. There may be many such media, but the object-code component remains the same." Resp. Br. 30. AT&T thus offers up the concept that object code is omnipresent—apparently, it "move[s] seamlessly" from place to place, such that it spontaneously "appears" on hard drives and other physical media. Resp. Br. 26 n.19, 31. But information does not "move" or "appear" by itself; it must be carried by *some* physical medium in order to be "combin[ed]" with other components. *See* Part II.A, *infra*. AT&T's position is thus at war with the statute.[5]

3. Any residual doubt as to the proper construction of Section 271(f) is resolved by the presumption against extraterritoriality. Under AT&T's expansive reading of the statute, exporting a single master version of a component could give rise to unlimited extraterritorial liability based upon the foreign duplication of that U.S.-supplied master version. Congress gave no indication that it intended for Section 271(f) to effect such a massive expansion of the extraterrito-

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[5] Contrary to AT&T's contention (Resp. Br. 34), the fact that Microsoft collects royalties on foreign-produced copies hardly shows that Microsoft "supplied" those copies from the United States. A manufacturer of a shrimp deveining machine could send design templates overseas and contractually require a license fee for each copy produced. That manufacturer has no more violated Section 271(f) than Microsoft has.

rial reach of U.S. patent law. *See F. Hoffman-La Roche Ltd. v. Empagran S.A.*, 542 U.S. 155, 174 (2004) (as long as a "statute's language reasonably permits an interpretation consistent with" the presumption that Congress seeks to avoid interference with other nations' sovereignty, a court "should adopt it").

AT&T contends that the presumption is inapplicable because AT&T seeks to hold Microsoft liable for the domestic act of shipping master versions of Windows to foreign manufacturers, rather than for overseas conduct. But AT&T's characterization of its theory of liability is flatly contradicted by the facts to which it stipulated, which establish that AT&T's Section 271(f) claim is premised in its entirety on the installation of *foreign*-replicated copies of the Windows object code on *foreign*-assembled computers marketed to *foreign* consumers. *See* Pet. App. 46a ¶ 10. It is in precisely such circumstances that application of the presumption is needed to ameliorate the risk that U.S. law will interfere with overseas commercial activities and with foreign nations' sovereign prerogatives. *See Empagran*, 542 U.S. at 165; *see also* U.S. Br. 29. Moreover, that Section 271(f) prohibits U.S. companies from supplying U.S.-manufactured components to foreign companies for assembly abroad does not, in the absence of an equally clear statement about *foreign*-manufactured components, provide a basis for extending the statute's extraterritorial reach to *foreign*-made copies. To the contrary, *expressio unius est exclusio alterius*. Indeed, it would be difficult to envision a patented product that could not be created abroad from foreign replication of its components based on U.S. designs, blueprints, or templates.

AT&T further contends that the presumption against extraterritoriality should not apply because there is no possibility that the extension of Section 271(f) to foreign software production will conflict with foreign intellectual property law. Resp. Br. 44. But even a cursory examination of the international legal landscape demonstrates that the extraterri-

torial application of Section 271(f) could significantly disrupt foreign countries' intellectual property law systems. For example, the United States is the only country in the world where patents are awarded to the first person to develop an invention, rather than to the first person to file a patent application. *See* Br. of Intellectual Property Professors 10. The extension of Section 271(f) to foreign-produced copies could therefore afford extraterritorial patent protection to a U.S. patent holder not entitled to a patent under the first-to-file rule of the foreign country in which the copying took place. Allowing the U.S. patent holder to recover damages under Section 271(f) for foreign-produced copies would displace significantly the foreign country's own decisions regarding the requirements for obtaining patent protection within its territory.

II. AN ABSTRACT SEQUENCE OF BINARY COMMANDS—AN *IDEA*—IS NOT ITSELF A "COMPONENT" THAT CAN BE "COMBIN[ED]" TO INFRINGE AT&T'S PATENT

As AT&T recognized before this Court granted certiorari, "a machine is a 'concrete thing, consisting of parts, or of certain devices and combination of devices.'" Br. in Opp. to Pet. for Cert. 12 (quoting *Burr* v. *Duryee*, 68 U.S. (1 Wall.) 531, 570 (1864)). And, indeed, the case cited by AT&T pointedly did not include among a machine's constituent parts "a 'principle' or a 'mode of operation,' or an *idea*, or any other abstraction." *Burr*, 68 U.S. (1 Wall.) at 570 (emphasis in original). AT&T nevertheless now contends that a *concept*, a *principle*, or an *idea*—object code in the abstract, or "a binary sequence of numbers that 'lacks physical existence'" (Second Supp. Cert. Br. 4)—constitutes a "component" of the speech coding *apparatus* claimed in AT&T's '580 patent. *See* Resp. Br. 13 ("This case turns on . . . [w]hether digital software code—an intangible sequence of '1's' and '0's'—may be considered a 'component[] of a patented invention' within the meaning of Section 271(f)(1).")

(internal quotation marks omitted; brackets in original). Abstract ideas and designs are not statutory "components" of the machines they inspire.

A. The Text Of Section 271(f) Makes Clear That "Components" Must Be Physical

AT&T acknowledges that a statutory "component" must be susceptible to being both "combin[ed]" with other components and "supplie[d] . . . from the United States." Resp. Br. 24, 31.[6] AT&T nevertheless maintains that abstract instructions and other nonphysical items—*ideas*—satisfy both conditions, labeling Microsoft's arguments to the contrary "nonsense" and "sophistry." Resp. Br. 24, 32.

Citing *Webster's Third*, AT&T contends that "[i]t is perfectly natural to speak of combining intangible object code with physical components." Resp. Br. 24. Tellingly, however, AT&T cites no definition or ordinary usage of the verb "to combine" where one object of the verb is physical and another is abstract. This is because while one ordinarily combines physical things to make an invention, *see, e.g.*, *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518, 520-21 (1972), it is impossible "to mix together" an object from the physical realm and an idea from the nonphysical realm. An abstraction, concept, or idea must be reduced to some physical form in order to be combined with a physical thing. Ideas are reduced—etymologically, led back—from the nonphysical ether to a physical medium, and only then are combined with other physical things. Because the other components of the "patented invention" in this case—*i.e.*, the computer hardware that, when programmed, is capable of functioning as a speech decoder—are physical, the component to be combined must also be physical.

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[6] These concessions render irrelevant AT&T's numerous citations to dictionary definitions and other uses of the term "component" in contexts remote from and unrelated to Section 271(f). *See* Resp. Br. 20-21 nn.10-13.

Similarly, AT&T contends that an abstract idea can be "supplied," even though it is agreed that abstract ideas must be reduced to a physical format before they can be transmitted to others. Pet. Br. 42; Resp. Br. 31. On AT&T's view, even though transmission of abstract ideas requires a "physical-layer container, . . . the object code itself remains the component supplied." Resp. Br. 31. But this is no more than AT&T's *ipse dixit* that the physical device is an irrelevant "container" for an idea. But the "physical-layer" embodiment of an idea is *not* merely a "container" for the idea. To correct one of AT&T's examples, a book entitled *Moby-Dick* is *not* simply a "container" for the narrative of Ishmael. It is a physical manifestation of the abstraction. One cannot pour that narrative—as if it were Coca-Cola—"from one container," such as an original manuscript, "to other containers," such as a paperback edition. The original *copy* persists, as does each subsequent copy.

Moreover, Section 271(f) reinforces the requirement that components be physical, material objects by requiring that they be "supplie[d]" *from* a particular *place*—the United States. While determination of the *source* of a physical embodiment of an idea (or a copy of *Moby-Dick*) might present little difficulty, it makes no sense to ask where an abstract idea, scientific truth, concept, or principle existed at any point in time. *Cf. Dastar Corp.* v. *Twentieth Century Fox Film Corp.*, 539 U.S. 23, 31-32 (2003) (holding that the phrase "origin" of "goods" in the Lanham Act refers to the manufacturer of "the tangible product sold in the marketplace," rather than to the "person or entity that originated the ideas or communications that 'goods' embody"). This paradox—to which AT&T has no response—is amplified here by the fact that a court must determine that the accused infringer supplied "all or a substantial portion of the components"; a court could hope to identify "all" of the abstract components only by reference to the physical components that supposedly embody those ideas. Because only a physical embodiment of

an abstract idea can be "supplie[d] . . . from the United States," this Court should reject AT&T's contention that an abstract sequence may be deemed a statutory component.

B. Abstract Object Code Is Not A Component Of The Speech Coding Apparatus Claimed By The '580 Patent

The '580 patent claims various structures that are capable, when combined, of performing certain speech coding functions. Supp. J.A. 17-19. The patent's apparatus claims are stated in means-plus-function format, and AT&T implicitly concedes—as it must, *see* 35 U.S.C. § 112 ¶ 6; Pet. Br. 41 n.13—that the "elements" of the claimed combination do not include abstract object code, because an "element" must be physical. Resp. Br. 22. But it nevertheless insists that abstract code is a "component"—indeed, "*the* key component" (*id.* at 3) (emphasis in original)—of any infringing apparatus. As the absence of supporting authority indicates, this contention is deeply flawed.

Abstract object code floating in the ether has no functionality whatsoever; it neither performs any speech coding functions nor enables other structural components to do so. *See* Resp. Br. 23. Just as a song must be sung to be heard, a computer program must be en*coded*—hence the terms source *code* and object *code*—into a physical medium before it can program a computer and in so doing transform a general purpose machine into a patentable special-purpose computer that is "physically different from the machine without the program." Br. in Opp. to Pet. for Cert. 11; *see also In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc). A computer program (object code) in the abstract, to paraphrase AT&T's brief to the Federal Circuit, is "[non]functional, [non]operational, [non]useful, and [non]patentable." Resp. C.A. Br. 13. It is only when the sequence of instructions is reduced to a physical, machine-readable and -executable format that "[s]oftware may . . . be the *structure* correspond-

ing to means-plus-function limitations in a patent claim." Br. in Opp. to Pet. for Cert. 12 (emphasis added).

AT&T objects that the term "component" should not be limited to "'components' that are independently useful or novel before their combination with other components." Resp. Br. 24 (emphasis omitted). This objection assumes—wrongly, as demonstrated above—that mental abstractions can be "combined" with physical objects. More fundamentally, though, it is not for lack of novelty or usefulness that abstract instructions cannot be a component. The point is that abstract instructions are themselves never made part of an infringing structure—only machine-readable and -executable instructions (*i.e.*, physical instantiations of software) are.

C. If Accepted, AT&T's Position Would Radically Transform The U.S. Patent System

1. There is no principled basis for limiting nonphysical "components" to object code. In the first place, software is not to be treated differently under U.S. patent law than any other technology (TRIPS Agreement pt. II, § 5 (1994)), and AT&T concedes that Congress had no such intention when it enacted Section 271(f). Resp. Br. 41. Therefore, if adopted as the holding of this Court, AT&T's position would extend broadly to other abstract information and instructions, with correspondingly grave consequences for the U.S. patent system.

AT&T's own analogies to hypothetically patented books and programmed player pianos signal an acknowledgment that its rationale extends at least to stored content. On AT&T's view, the narrative (content) is a component of a book; the song (content) is a component of a player piano programmed to play that song; and a computer program (content) is a component of a computer configured to execute that program. At the same time, though, AT&T seems to recognize that, properly construed, Section 271(f) does not reach

the export of design information, blueprints, templates, or product specifications, never mind other abstract concepts. *See* Resp. Br. 27. AT&T attempts to distinguish stored content from other design information and instructions on the ground that stored content is "present in the device," while design instructions and information "are not themselves part of the finished product." *Ibid.* "The instructions prescribed by the object code," AT&T argues, "are at all times present within the computer." Resp. Br. 28. That distinction, however, does not withstand scrutiny.

AT&T's proposed distinction fails because it is bottomed on the false premise that an *abstract* computer program can be "present within the computer." Resp. Br. 28. Yet, AT&T acknowledges that object code instructions are "present within the computer" *only* when those instructions are physically embodied in—to use AT&T's terminology—one of the "physical layers" of the computer apparatus. *See* Br. in Opp. to Pet. for Cert. 11 ("When [a computer] is programmed, it is *physically* different from the machine without the program . . . .") (emphasis added). As explained in Microsoft's opening brief, when a computer program is installed, the machine typically stores the object code instruction by aligning pairs of bands of magnetically charged particles on a hard disk with each pair of bands representing a "1" or "0" of the object code and instructing one of the computer's internal switches to open or close. *See* RON WHITE, HOW COMPUTERS WORK 144-45 (8th ed. 2006). Object code instructions cannot be "present within the computer," Resp. Br. 27, if they "'lack[] physical existence,'" Second Supp. Cert. Br. 4.

AT&T cannot have it both ways: It cannot distinguish object code from other design information on the basis that machine-readable object code has physical attributes and is incorporated into a computer, while simultaneously urging that purely abstract object code is the component here at issue. Either AT&T must concede that the physical, machine-

readable instantiation of the object code installed in foreign-manufactured code is the component at issue, or it must acknowledge that its proffered interpretation of "component" encompasses *all* of a patented invention's nonphysical aspects and antecedents.

2. If, as AT&T urges, Section 271(f) is construed to prohibit the export of the nonphysical "components" of patented inventions, it will exponentially enlarge the reach and monopolistic power of U.S. patents.

Through its *Moby-Dick* and *Star Spangled Banner* analogies, AT&T embraces the conclusion that a novel's "unique series of words,"—*i.e.*, its narrative—must be viewed as the key component of any book bearing the novel's title, and that "the intangible arrangement of musical notes"—to wit, a song—must be regarded as a component of an apparatus configured to play that tune. Resp. Br. 26-27. AT&T then tries to soften the blow by asserting that no such device possibly could be patented. *See id.* at 27 n.21. At least with regard to musical devices, however, that assertion is unfounded. For example, U.S. Patent No. 4,554,856, entitled "Music Box With Indicator Hoist Mechanism," claims an apparatus whose "projections and . . . vibration plate cooperate to play musical notes representative of a country's *national anthem*." *Id.* col.4 *ll.*30-34 (filed Mar. 5, 1984) (claim no. 8) (emphasis added). Therefore, on AT&T's view, the national anthem is a "component" of the music box in the '856 patent, and Section 271(f), at least in some circumstances, bars exportation even of music.

But music is not all. A computer programmed with software is no different from any other machine that has physical components that instruct other components to perform a function, like the gears of a watch that instruct the hands and date indicators to move in a certain way or the lobes on a camshaft that instruct the valves of an engine to open or close.

Moreover, if the term "component" encompasses nonphysical things, it most certainly reaches the design of any patented invention that derives its novelty and utility from its design rather than its physical components. For example, in *Mercoid Corp.* v. *Minneapolis-Honeywell Regulator Co.*, 320 U.S. 680 (1944), the patent-in-suit claimed "a system of hot air furnace control." *Id.* at 682. The system structure was comprised exclusively of unpatented thermostats and switches. The inventor's "'advance in the art' was the *arrangement* of thermostatic switches" to achieve certain useful functionality. *Id.* (emphasis added). Similarly, in *Diamond* v. *Diehr*, 450 U.S. 175 (1981), the patent-in-suit claimed a process for curing synthetic rubber according to the "Arrhenius equation." *Id.* at 177. If a "component" need not be physical, designs like that at issue in *Mercoid* must be considered the central "components" of claimed systems, and "when a claim recites a mathematical formula (or scientific principle or phenomenon of nature)," and "implements or applies that formula in a structure or process," that formula similarly must be considered a component of the claimed invention. *Id.* at 191, 192.

It follows necessarily from AT&T's all-encompassing construction of "component" that, at least where the claimed invention is (as here and in *Mercoid*) a "combination or composition," a patentee also may use Section 271(c)'s contributory infringement provision to prohibit others from selling such design information domestically, or even importing it. *See* 35 U.S.C. § 271(c). And although Section 271(c) has been on the books since 1952 (and the doctrine of contributory infringement long before that), AT&T cites no case in which the sale of a design or some other nonphysical antecedent to an invention resulted in contributory infringement of a patent under that provision.[7]

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[7] And here, AT&T stipulated to dismissal of its claim for contributory infringement under Section 271(c). Pet. App. 42a ¶ 2.

To return to an example from the opening brief (to which AT&T, tellingly, has offered no response), under AT&T's view of the law, exportation of a single copy of the '580 patent—itself merely a vessel for the source code, *i.e.*, design information, "it contains" (Resp. Br. 29)—could give rise to Section 271(f) liability. Exportation of the patent at issue in *Mercoid*—again, on AT&T's view, no more than a container for the design information it discloses—similarly would trigger Section 271(f) liability if it induced the foreign recipient to practice the combination invention claimed in the patent. And sale of copies of either patent by the Patent and Trademark Office could give rise to contributory infringement liability under Section 271(c). *See* 35 U.S.C. § 41(d)(3) (requiring the Director of the Patent and Trademark Office to charge "[f]or each black and white copy of a patent, $3").

AT&T has pointed to nothing that even remotely suggests that Congress, by enacting a provision to close the patent-law loophole identified by this Court in *Deepsouth*, intended so sweeping a revision of the patent laws, engendering such a bizarre collection of absurd results. And this Court, of course, will avoid construing the statute in a way that produces such absurd results. *Dewsnup* v. *Timm*, 502 U.S. 410, 427 (1992). AT&T's argument boils down to a request that this Court *extend* Section 271(f) to a context that Congress never contemplated. Indeed, the Federal Circuit acknowledged that it was doing just that. Pet. App. 10a ("Section 271(f), if it is to remain effective, must . . . be interpreted in a manner that is appropriate to the nature of the technology at issue."). But the extension of the patent laws is for Congress, not the Judiciary. *See Parker* v. *Flook*, 437 U.S. 584, 595-96 (1978).

3. AT&T paints Microsoft's arguments in this case as an attempt to obtain special treatment for software companies and to secure a judicial "repeal" of Section 271(f) for software-related inventions. AT&T has it precisely backward.

Microsoft's argument in this case is premised on the notion that software components should be treated no differently under Section 271(f) than the components of any other types of inventions. Just as a manufacturer of a shrimp deveining machine would not be liable under Section 271(f) if it exported templates or molds of each of the machine's component parts to be used by foreign companies to manufacture copies of each component for final assembly abroad, Microsoft is not liable for sending master versions of its Windows object code to foreign manufacturers for replication and installation in foreign-assembled computers. In neither is a component of the patented invention supplied from the United States. This evenhanded application of Section 271(f) to software-related inventions—which is required by treaty (TRIPS Agreement pt. II, § 5)—cannot fairly be characterized as "special treatment," notwithstanding AT&T's vehement protestations to the contrary.

Moreover, a decision in favor of Microsoft would not immunize software companies from liability under Section 271(f). To the contrary, U.S. software companies could be liable under Section 271(f) when they supply from the United States the physical software media (such as hard drives) that are actually—rather than "essentially"—combined with computer hardware as physical parts of a patented programmed-computer invention. Pet. Br. 34 n.9; *see also* U.S. Br. 25 n.2. Similarly, U.S. software companies could be liable under Section 271(c) when they sell within the United States physical software media that are combined as physical parts of patented programmed-computer inventions. *See* 35 U.S.C. § 271(c). And in cases where a software company also sells a device incorporating the software—such as a videogame console—the U.S. software company could be liable under Section 271(a) for manufacturing the physical media in the United States. *See* 35 U.S.C. § 271(a). In any case, the ultimate liability determination would depend on whether the U.S.-manufactured physical medium either in-

fringes a claim of the asserted patent, or whether it does so when it is combined with other components—an inquiry that necessarily depends on the particular claims of the particular patent. That Section 271(f) does not reach U.S. persons who *design* software rather than *manufacture* the software-encoded media is an insufficient argument for its judicial revision.

A ruling in favor of Microsoft would not alter the fact that U.S. software companies could be subject to liability under Section 271(f) if they—like their counterparts in other industries—ship physical, functional components of a patented invention from the United States with the intention that those same components be combined overseas to form a patented invention, but are not liable under Section 271(f) if they—like their counterparts in other industries—ship templates or design information abroad with the intention that *copies* be made overseas for installation into foreign-made devices. A ruling in favor of AT&T, by contrast, would either put software companies on a different footing than their competitors in other industries, in derogation of the fundamental rule that the patent laws are technology-neutral, or vastly expand the reach of U.S. patents to the foreign replication of components of all manner of patented products designed in the United States.

CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted.

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No. 05-1056

In the Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Petition for a Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

SUPPLEMENTAL BRIEF OF RESPONDENT

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SUPPLEMENTAL BRIEF OF RESPONDENT

In its reply brief, Petitioner Microsoft Corporation incorrectly reports the record relating to 35 U.S.C. § 271(f)(2). Reply Br. at 4-5. Because section 271(f)(2) is an alternate ground for the judgment below, and because Petitioner's statements about section 271(f)(2) constitute new matter that could mislead the Court, Respondent AT&T Corp. respectfully submits this supplemental brief pursuant to Supreme Court Rule 15.8.

Petitioner's reply asserts that Respondent "*never*" alleged liability under section 271(f)(2) and that the courts below "*never*" found liability thereunder. Reply Br. at 5 (emphasis in original). As to the requirement in section 271(f)(2) that the "component" "supplied" from the United States be "especially made or especially adapted for use in the invention," Petitioner asserts that:

> The notion that Microsoft Windows—which has literally hundreds of uses beyond speech processing—was "especially made or especially adapted for use" in respondent's speech codec invention fails even the straight-face test. ... Not surprisingly, then, respondent did not allege, the district court did not find, and Microsoft did not stipulate that Windows was "especially made" for use in respondent's patented invention.

Id. Petitioner's reply brief contradicts the record in numerous respects.

First, AT&T alleged that Microsoft infringed under section 271(f)(1) and (f)(2), and Microsoft moved for partial summary judgment under section 271(f)(1) and (f)(2).[1] AT&T alleged that certain Microsoft products contain infringing speech "codecs" (software programs that are capable of converting speech signals into compact code and back again). Pet. App. 21a & n.1 (quoting Am. Compl. ¶ 14). In particular, AT&T alleged that the "golden master" copies of Microsoft Windows software contained those infringing software codecs, and that the supply of those software components from the United States for assembly of the invention abroad infringes under section 271(f). Pet. App. 24a. AT&T did not limit its allegations to section 271(f)(1), but alleged infringement under section 271(f) as a whole. *See, e.g.*, Pet. App. 21a-22a, 24a.

Indeed, when Petitioner moved for partial summary judgment, it invoked both section 271(f)(1) and 271(f)(2):

> Microsoft's exportation of "golden master" disks upon which Windows operating system software information is stored is not an act of infringement under 35 U.S.C. §§ 271(f)(1) ***or (2)***. Consequently, AT&T should be precluded from advancing an infringement claim ***under these statutory sections***.

Supp. Br. App. 3b (emphasis added). Further contradicting Petitioner's assertion that Respondent's briefs below "*never* once ... suggested that Microsoft was liable under Section

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[1] Microsoft originally styled its motion as a motion in limine to exclude evidence of foreign sales, but the parties later stipulated to convert it to a motion for partial summary judgment. Pet. App. at 21a-22a n.3.

271(f)(2)" (Reply Br. at 5, emphasis in original), AT&T explicitly quoted from section 271(f)(2) and analyzed cases that applied the "especially made or especially adapted" standard set forth in that section but not in section 271(f)(1). Supp. Br. App. 22b, 28b-29b. AT&T also quoted and analyzed the language of section 271(f)(2) in its brief to the Federal Circuit. AT&T App. Opp. Br. at 11, 47-48.

The record also contradicts Petitioner's statement that "the district court did not find ... that Windows was 'especially made' for use in respondent's patented invention." Reply Br. at 5. To the contrary, the district court explicitly quoted section 271(f)(2), analyzed the infringement standard in that section, and determined that section 271(f)(2) applied to the Windows codec software components at issue:

> [U]nder paragraph (2) the components must be especially made or adapted for use in the invention. ... Additionally, paragraph (2) requires the infringer to have an intent that a component "will be combined outside of the United States in a manner that would infringe if the combination occurred within the United States." 35 U.S.C. § 271(f)(2). ... ***Here, it is undisputed that Microsoft's object code is especially made and supplied from the United States*** for use in its Windows operating system, that Microsoft intended the components to be combined outside of the United States, and that Microsoft intended that the infringing objec code be directly incorporated as an essential part of the foreign-manufactured computers.

Pet. App. 27a-28a (emphasis added, citing the stipulated facts at Pet. App. 44a-47a).[2] The Stipulated Statement of Facts also provides that "[t]he District Court ruled in favor of AT&T on all 271(f) issues in [the summary judgment opinion]." Pet. App. 47a ¶ 11. Moreover, the district court explicitly adopted its "determinations" from that summary judgment opinion into the Stipulated Judgment. Pet App. 42a-43a ¶¶ 4-6. Finally, in affirming this judgment, the Federal Circuit also expressly referred to and relied on section 271(f)(2). Pet. App. 4a-5a.

CONCLUSION

Petitioner's misstatement of the record exceeds legitimate advocacy. The text, operation, and effect of section 271(f)(2) are materially different from section 271(f)(1). Microsoft expressly moved for partial summary judgment under section 271(f)(2). The district court denied Microsoft's motion, made a specific determination under section 271(f)(2), and entered judgment against Microsoft, in part based on section 271(f)(2). The Federal Circuit affirmed. Petitioner did not ask this Court to review that portion of the judgment based on section 271(f)(2). Petitioner presents either an incomplete

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[2] Petitioner's contention that there was no allegation, finding, or stipulation that "Windows was 'especially made' for use in respondent's patented invention" is misleading in a further sense. It sets up the spurious issue of whether Windows as a whole has any non-infringing uses, when the actual issue below was whether Petitioner's speech codec components of Windows infringe. *See, e.g.*, Pet. App. 24a-25a. Based on the Stipulated Facts, the district court concluded that those accused codecs had no other purpose or use except to practice the patented invention. Pet. App. 27a-28a.

case for review or a request for an advisory opinion. Either way, the petition is flawed and advances no persuasive reason to review the lower courts' correct decision.

Respectfully submitted,

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APPENDIX

APPENDIX A

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

AT&T CORP.	)	
	)	
Plaintiff,	)	Civil Action No.
	)	
v.	)	01 Civ. 4872 (WHP)
	)	
MICROSOFT CORPORATION	)	
Defendant.	)	
	)	

MICROSOFT'S MEMORANDUM IN SUPPORT OF ITS MOTION IN LIMINE BARRING EVIDENCE AS TO SUPPOSED LIABILITY UNDER 35 U.S.C. § 271(f)

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November 17, 2003

I. INTRODUCTION

Microsoft's exportation of "golden master" disks upon which Windows operating system software information is stored is not an act of infringement under 35 U.S.C. §§ 271(f)(1) or (2). Consequently, AT&T should be precluded from advancing an infringement claim under these statutory sections.

Section 271(f) proscribes the supply from the United States, i.e., exportation, of "components" of a patented product for assembly abroad under certain circumstances. A "component" is a constituent part of a patented product. Thus, section 271(f) proscribes the export of the parts to be combined abroad to form the patented product. Software that is replicated abroad, however, cannot be a part supplied from the United States. In this manner, the foreign replicated copies of Microsoft's Windows operating system software cannot be the statutory "components" supplied from the United States to form foreign computer systems.

Section 271(f) also does *not* proscribe exportation of intangible information. The Windows operating system software stored on golden master disks is intangible information. The golden master disk is simply a medium for the transmission of the software information. Transmission of information, whether it be object code laser etched in the form of pits and lands upon a compact disk (CD), in the form of source code written upon sheets of paper, or an algorithm committed to the memory of a person, cannot be subject to infringement liability under section 271(f). Thus, the exportation of intangible software information stored on the medium of golden master disks is not within the scope of section 271(f).

II. FACTUAL BACKGROUND

Microsoft makes a limited number of golden master disks in the United States on which Windows operating system software is stored. Some golden master disks are shipped abroad and the software information stored on them is replicated *outside* the United States. The replicated software is then installed abroad onto computer hardware to form computer systems.

Microsoft exports golden master disks to two different types of entities. First, Microsoft exports golden master disks to foreign computer manufacturers. Those manufacturers replicate abroad the Windows software stored on the disks, and then install that replicated software onto computer hardware for sale. Second, Microsoft also exports golden master disks to authorized foreign "replicators." The replicators make copies of the Windows software and supply the replicated copies to foreign computer manufacturers. In either case, the golden master disk itself is never incorporated into a computer system.[1]

Windows operating system software is intangible information that is the product of Microsoft's intellectual processes. Golden master disks are simply a tangible medium upon which the intangible Windows software is stored for transmission to others. By agreement, Microsoft has granted

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[1] Microsoft also supplies its Windows operating system software from the U.S. to certain foreign contractors by encrypted electronic transmission of the software code. The foreign contractors de-encrypt the software code and replicate the code for foreign distribution. The electronically transmitted code is not incorporated into foreign computer systems. Rather, the replicated copies of the Windows software code are incorporated into foreign computers.

foreign computer manufacturers and replicators the right to replicate Windows software. Pursuant to those agreements, Microsoft must deliver the software abroad. Golden disks represent a medium for doing so. The foreign computer manufacturers and replicators use the golden master disks as a mold or pattern to produce new copies of Windows software that are actually installed onto foreign computers. The Windows software stored on the golden master disks remains on the master, much like the words and ink on this page remain on this page even after a copy is made.

III. NEITHER GOLDEN MASTER DISKS, NOR INTANGIBLE INFORMATION STORED ON THEM, ARE "COMPONENTS" WITHIN THE MEANING OF 35 U.S.C. § 271(f)

A. The Plain Meaning Of The Term "Component" Is "A Constituent Part" of A Patented Product

Section 271(f) precludes exportation of certain "components" of patented inventions (Ex. 1). The copied units of the Windows operating system software replicated abroad cannot be the proscribed statutory "components" combined abroad because those units are not supplied from the United States.

Although not specifically defined in section 271(f), the term "component" must be interpreted in view of its "ordinary, contemporary, common meaning." *See Bayer AG v. Housey Pharm., Inc.*, 340 F.3d 1367, 1371 (Fed. Cir. 2003). "Dictionaries of the English language provide the ordinary meaning of words used in statutes." *Id.* The term "component" is defined as "a constituent part: INGREDIENT" (Webster's 3d New Int'l Dictionary (1981)). Thus, to be a prohibited "component" within the meaning of

section 271(f), an exported item must itself become a "constituent part" of an assembled product covered by a U.S. patent. Conversely, exported items that never become a constituent part of an assembled product are not within the ambit of section 271(f).

There is an important distinction between an item that is *itself a component* of a patented product assembled abroad and an item that is *used abroad to make a component* of a patented product that is assembled abroad. For example, consider exportation of a mold or machine that may be used abroad to make a component of an assembled product. While the *component* may become a part of the assembled product, the *mold* or *machine* cannot and does not become a part of the assembled product. While exportation of the *component* is proscribed by section 271(f) under certain circumstances, the statute does not preclude the exportation of the *mold* or *machine* used abroad to make the component. Nor can it logically be said that components made abroad using the mold or machine were exported or supplied from the United States.

A golden master disk is similar to a mold or machine used to make something that, at least arguably, is a component of a computer system. But the golden master disk itself is not a "constituent part" or "component" of that computer system. At most, it could be argued that newly-created Windows software copies, replicated abroad from the golden master mold, become constituent parts of a foreign-assembled computer system. But it cannot be said that those software copies were supplied from the United States. Furthermore, as explained below, section 271(f) does not reach the exportation of the information contained in those software copies.

B. Section 271 Limits "Products" And "Components" To Physical Articles And Does Not Encompass Intangible Information

To properly define the statutory term "component" as used in section 271(f), it is appropriate to look for guidance from other provisions of section 271. *Bayer*, 340 F.3d at 1372.

The Federal Circuit has recently set forth its opinion that the terms "product" and "component" as used in section 271(g) appear "to contemplate a physical product" as opposed to "information." *Id.* at 1373. Thus, *Bayer* reinforces the view that the statutory term "components" in section 271(f) refers to actual parts of a product assembled abroad. The statute does not refer to the export or import of *information*. *Id.* at 1376-77.

Accordingly, even if the golden master disk – the physical item itself – is the "component" supplied from the U.S. to form part of a patented invention abroad, the export of the *information* contained therein is not an act of infringement pursuant to section 271(f). As such, the foreign replications of that information also cannot constitute an act of infringement pursuant to section 271(f).

In *Bayer*, the patentee accused Bayer of importing research information obtained abroad through the use of the patentee's methods in violation of section 271(g). Section 271(g) prohibits importation of "a *product* which is made by a process patented in the United States" (Ex. 1). Section 271(g), however, exempts from liability a product that "becomes a trivial and nonessential *component* of another product." At issue was whether the imported "information"

constituted "a product which is made by a [patented] process." *Bayer*, 340 F.3d at 1371.

The Federal Circuit held that section 271(g) does not proscribe the import of information. *Id.* at 1376. In its analysis, the Federal Circuit relied in part upon the language of the exemption clause of section 271(g). Because the exemption arises if the imported "product" becomes a trivial "*component* of another product," the Federal Circuit stated that the term "component" "appear[s] to contemplate a physical product." *Id.* at 1373. Accordingly, the Federal Circuit has already opined that the statutory term "component" contemplates a physical product, and not information that is the product of intellectual processes. *Id.* at 1376-77.

C. The Legislative History Reflects Congressional Concern With Exportation Of Physical Articles To Be Assembled Abroad Rather Than Exportation Of Intangible Information

The legislative history of section 271(f) reflects congressional concern with exportation of physical items that are assembled abroad into patented products. In the face of silence in the legislative history, this Court should decline to broadly interpret section 271(f) to prohibit the export of information. *Bayer*, 340 F.3d at 1376.

Congress enacted section 271(f) in response to the Supreme Court's decision in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972). In *Deepsouth*, the defendant, after being found to be an infringer, sought modification of the injunction issued against it to export the very product it was precluded from making, using, or selling within the United States. *Id.* at 523-24. To avoid the effects

of the patent law and the injunction, the defendant made all of the components of a shrimp deveining machine within the United States and then shipped the components for assembly abroad. *Id.* at n. 5 ("Deepsouth is entirely straightforward in indicating that its course of conduct is motivated by a desire to avoid patent infringement.") The issue was whether the defendant was "making" the patented invention within the United States and thereby infringing under 35 U.S.C. § 271(a). The Supreme Court ruled that "making" requires an "operable assembly of the whole and not the manufacture of its parts." *Id.* at 528. Because the defendant never combined the components within the United States, the Supreme Court condoned the defendant's actions to avoid the injunction by holding that there was no direct infringement by making.

In response to *Deepsouth*, Congress enacted section 271(f) to prevent infringers from avoiding U.S. patents by manufacturing the parts of a patented product within the United States and completing the final steps of the assembly process abroad. The legislative history reflects Congress' desire to halt infringers from "supplying components of a patented product in this country so that the assembly of the components may be completed abroad" (Ex. 2). The legislative history, however, shows no affirmative congressional intent to prohibit either exportation of information, or exportation of physical articles that never become a "constituent part" of a patented product assembled abroad. Rather, the legislative history reflects congressional intent to prohibit export of tangible items to be assembled abroad into a product that would otherwise infringe a U.S. patent. "In the face of silence in the legislative history," courts should be "reluctant to broadly interpret the legislation." *Bayer*, 340 F.3d at 1376. The legislative history's very silence thus suggests that Congress did not intend section 271(f) to broadly preclude exportation of, or

foreign replication of, intangible information (such as Windows operating system software) or exportation of items that never become a part of a patented product assembled abroad (such as the golden disks themselves).

The Federal Circuit's analysis of the legislative history of section 271(g) in *Bayer* is helpful to determine the meaning of the term "component" at issue here. While sections 271(g) and 271(f) concern different infringing acts, the Federal Circuit noted that the two sections were companion provisions sharing a common legislative history. *Id.* at 1374. This common legislative history leads to the conclusion "that Congress was concerned solely with *physical* goods that had undergone manufacture." *Id.* at 1373 (emphasis added). There is "nothing in the legislative history suggesting that Congress was concerned that the preexisting statutory scheme failed to reach *intangible information*." *Id.* at 1374 (emphasis added). Clearly, "Congress was concerned with *tangible products* and not mere *information*." *Id.* at 1376 (emphasis added).

Accordingly, the legislative history reflects no congressional intent to prohibit export of intangible information. But the Windows software contained on the golden master media is just that — intangible information. That information is subjected to a replication process *abroad* by others for incorporation into foreign computers. Microsoft does not conduct that process within the United States and export the replicated software copies. Thus, section 271(f) is not implicated by Microsoft's actions.

D. Reading The Term "Component" To Cover Something Used To Make Something Else That Is A Part Of A Patented Product Or To Cover Intangible Information Leads To Anomalous Results

Both the plain language and the legislative history of section 271(f) reflect that Congress intended to prohibit exportation of tangible items for assembly into patented products abroad. Reading the statute to cover export of information or physical items that are merely used abroad to make parts for an assembled foreign product would lead to anomalous results.

Assume, for example, that a person exports a mold for producing parts abroad. Further assume that these foreign-made parts are then combined abroad with other parts to assemble a final product. The articles made using the mold are the "parts" or "components" of the final product. The mold, however, is not a "part" or "component" of the final product. Under the proper statutory construction, exportation of the mold would not lead to infringement liability under section 271(f). But under AT&T's proposed statutory construction, exportation of the mold *would* lead to liability.

Similar to mold replication are those instances in which chemicals exported from the U.S. are modified abroad to make a finished product. In *Bristol-Myers Squibb Co. v. Rhone-Poulenc Rorer, Inc.*, 95 Civ. 8833 (RPP), 2001 U.S. Dist. LEXIS 16895, *11-*15 (S.D.N.Y. Oct. 15, 2001), *aff'd.* 326 F.3d 1226 (Fed. Cir. 2003), exportation of a chemical precursor that was modified abroad to form one part of a two part product was held not to implicate section 271(f). The court held that the precursor was not "literally a component" of the claimed product. *Id.* at *15.

More directly, however, is that section 271(f) cannot be interpreted to cover export of information. In *Bayer*, the Federal Circuit specifically noted that to disregard the plain meaning and legislative history of the statute by holding that information is covered by section 271 "could lead to anomalous results." *Bayer*, 340 F.3d at 1376. The Court rejected the patentee's proposed construction of section 271(g) because, under it, "a person possessing the allegedly infringing information could . . . possibly infringe by merely entering the country." *Id.* at 1376. The court stated: "Such an illogical result cannot have been intended." *Id.* Similarly under AT&T's proposed construction of section 271(f), a person possessing the Windows software information could possibly infringe AT&T's patent by merely leaving the country with that information and entering the information into a foreign computer system possessing all of the other necessary claimed components.

If section 271(f) is to be extended to preclude exportation of information, as urged by AT&T, Congress and not the Courts should make that determination. *Id.* at 1376-77 ("Congress is in a far better position to draw the lines that must be drawn if the product of intellectual processes rather than manufacturing processes are to be included in the statute.").

E. Section 271(f) Should Not Be Expanded Beyond Prohibiting The Exportation Of Physical Articles That Become A Component Of A Patented Product

Bayer's admonition that section 271(g) should be narrowly construed applies equally to the construction of section 271(f) here. The Court should not expand section 271(f) beyond the export of the physical components used in products assembled

abroad. For example, various cases have found section 271(f) liability where physical parts were exported for assembly abroad into a final product. *See, e.g., Moore U.S.A., Inc. v. Standard Register Co.*, 144 F. Supp. 2d 188, 195-96 (W.D.N.Y. 2001) (supply of paper and glue required to make mail envelopes); *T.D. Williamson, Inc. v. Laymon*, 723 F. Supp. 587, 590-93 (N.D. Okla. 1989), *aff'd*, 923 F.2d 871 (Fed. Cir. 1990) (supply of components used to assemble caliper pig); *W.R. Grace & Co. -Conn. v. Intercat, Inc.*, 60 F. Supp. 2d 316, 320-21 (D. Del. 1999) (supply of chemical materials to be combined with other materials abroad).

In contrast, courts have repeatedly rejected efforts to expand the scope of section 271(f) beyond its limited sphere. *See, e.g., Pellegrini v. Analog Devices, Inc.*, C.A. No. 02-11562-RWZ, 2003 U.S. Dist. LEXIS 7598, *1-*4 (D. Mass. May 7, 2003) (rejecting as "sophistry" patentee's argument that exportation of instructions for foreign disposal of computer chips was within section 271(f)); *Bristol-Myers*, 2001 U.S. Dist. LEXIS 16895, at *16-*18 (rejecting argument that instructions from the United States to combine parts made abroad implicated section 271(f) liability); *Fieldturf, Inc. v. Southwest Recreational Indus., Inc.*, 235 F. Supp. 2d 708, 733 (E.D. Ky. 2002) (limiting scope of section 271(f) to avoid extraterritorial effect of U.S. patent law); *Enpat, Inc. v. Microsoft Corp.*, 6 F. Supp. 2d 537, 539-40 (E.D. Va. 1998) (because there are no "components" or "patented physical product" to a patented method, section 271(f) does not apply); *Aerogroup Int'l v. Marlboro Footworks, Ltd.*, 955 F. Supp. 220, 231-32 (S.D.N.Y. 1997) (section 271(f) inapplicable to a design patent for a shoe sole because the design patent claimed no tangible "components"); *see also Standard Havens Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1991) (section 271(f) does

not apply to an apparatus exported to implement a patented process because process has no components).

The *Eolas* and *Imagexpo* cases (Ex. 3) are not governing precedent for the present issue. Neither addressed the statutory construction of the term "component." Neither analyzed the legislative history. Neither took the *Bayer* case into consideration.

CONCLUSION

For the foregoing reasons, AT&T should be precluded from advancing a section 271(f) theory of patent infringement liability.

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November 17, 2003

APPENDIX B

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

AT&T CORP.	)	
Plaintiff,	)	
	)	Civil Action No.
v.	)	01 CV 4872 (WHP)
	)	
MICROSOFT CORP.	)	
Defendant.	)	
	)	

AT&T's MEMORANDUM IN OPPOSITION TO MICROSOFT'S MOTION IN LIMINE TO BAR EVIDENCE OF LIABILITY UNDER 35 U.S.C. § 271(f)

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Dated: December 1, 2003

Plaintiff AT&T Corp. submits this memorandum in opposition to Microsoft's motion *in limine* to bar evidence of Microsoft's infringement under 35 U.S.C. § 271(f). Because the bases for Microsoft's motion are contrary to established law, the motion should be denied.

I. INTRODUCTION

During more than two years of discovery in this case, Microsoft withheld evidence that it exports from the United States to foreign computer manufacturers ("original equipment manufacturers" or "OEMs") "golden master" CDs containing the accused software, and does so with the intent that the software on those golden masters be installed on foreign-made computers. After failing to convince the Court that withholding this evidence warranted having the issue excluded from the case entirely, Microsoft now asks this Court to exclude this evidence because, in Microsoft's opinion, section 271(f) should not be interpreted to cover such activities. Microsoft's position is, however, in direct conflict with well-established law.

Microsoft's motion *in limine* is based entirely on two premises, both of which are fundamentally wrong. Microsoft argues that: (1) the software on its golden masters is nothing but "intangible information", and (2) the golden master CDs containing that software are themselves never incorporated into the foreign-made computers. Microsoft therefore reasons that neither the golden masters nor the software stored thereon are "components" within the meaning of section 271(f). Microsoft cites no cases that support this conclusion, instead arguing for a novel and fatally flawed interpretation of section 271(f).

As explained in more detail below, under the language of the statute and its legislative history, section 271(f) clearly applies to infringing software. Moreover, the Federal Circuit Court of Appeals has also approved of the application of section 271(f) to infringing software exported from the United States. See *Southwest Software, Inc. v. Harlequin Inc.*, 226 F.3d 1280, 1298-99 (Fed. Cir. 2000) (remanding for determination of infringement—including infringement under section 271(f)—by accused software). Federal Circuit law also refutes Microsoft's position that software is merely "intangible information," for it is clear that software to be run on a computer system constitutes a patentable *apparatus*. *See, e.g., In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994); *see also Imagexpo, LLC v. Microsoft Corp.*, No. 3:02CV751, 2003 U.S. Dist. LEXIS 15139, at *4 (E.D. Va. Aug. 19, 2003) ("The [software] code itself is a patentable apparatus.") (Microsoft's Mot. Ex. 3). Indeed, two courts have specifically held that Microsoft's golden masters can be a component of patented inventions and infringing products under section 271(f). *See, e.g., Imagexpo*, 2003 U.S. Dist. LEXIS 15139, at *8 (holding that Microsoft's golden masters and the electronic code supplied by Microsoft to its overseas representatives constitute "components" under section 271(f)); *Eolas Techs., Inc. v. Microsoft Corp.*, 274 F. Supp. 2d 972, 974 (N.D. Ill. 2003) (holding software code on a computer product to be the legal equivalent to computer hardware, and allowing a 271(f) claim against Microsoft's golden master discs); *see also NTP, Inc. v. Research In Motion, Ltd.*, 261 F. Supp. 2d 423, 431 (E.D. Va. 2002) (finding application programs, including Microsoft's Exchange Server software, to be components of patented inventions combined inside and outside the United States, and granting summary judgment of infringement under section 271(a), (b), (c) and (f)). Finally, the United States Patent and Trademark Office itself recognizes that software used in a computer is a structural and

functional part of a patentable manufacture or machine. *See, e.g.*, Manual of Patent Examining Procedure § 2106 (8th ed. 2003) [hereinafter "MPEP"]. Thus, it is clear that the law views software—and golden master CDs containing that software—not as "intangible information," but as products capable of being patented, and of infringing under section 271(f).

Microsoft's novel construction of section 271(f) completely ignores controlling law and relevant cases. Microsoft's construction should therefore be rejected, and its motion should be denied.

II. BACKGROUND

In its motion *in limine*, Microsoft acknowledges that it exports its Windows operating system products to foreign OEMs and "replicators," who then copy those software products onto computer systems and CDs for sale and distribution. (Microsoft's Br. at 2.) Microsoft similarly acknowledges that it exports its Windows products through two mechanisms: (1) by copying the software onto "golden master" CDs that are sent from the United States to the foreign OEMs and replicators; and (2) through electronic transmission (downloading) of the software from the United States directly to those foreign OEMs and replicators.[1] *Id.*

---

[1] Despite having asked in 2001 for evidence concerning the distribution of Microsoft's Windows products, including distribution to OEMs, AT&T first learned ***in Microsoft's opening brief*** that Microsoft also sends its Windows products to foreign replicators through electronic transmission. Microsoft is still withholding the evidence of this exportation. Nevertheless, as will be shown below, it makes no difference under section 271(f) whether Microsoft exports its software through golden masters or

Microsoft also acknowledges that it exports this software with the intent that it be installed onto computers:

> By agreement, Microsoft has granted foreign computer manufacturers and replicators the right to replicate Windows Software. Pursuant to those agreements, Microsoft must deliver the software abroad. Golden disks represent a medium for doing so. The foreign computer manufacturers and replicators use the golden master disks ... to produce new copies of Windows software that are actually installed onto foreign computers.

Id.

III. ARGUMENT

A. Under the Language of The Statute and Its Legislative History, Section 271(f) Applies to Software.

The Patent Act generally applies only to infringing activities that take place within the United States. *See, e.g.*, 35 U.S.C. § 271(a) (stating that "whoever without authority makes ... any patented invention, within the United States ... during the term of the patent therefor, infringes the patent"). Section 271(f) is an exception to that general rule that was enacted to close a serious loophole in infringement law

---

electronic transmission. That *software* is a substantial portion of the components being combined outside the United States in a manner that would infringe if the combination occurred within the United States. Consequently, Microsoft is liable under section 271(f) for both its golden masters and electronic transmission.

created by *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972). In *Deepsouth*, the Supreme Court held that manufacturing components of a patented invention in the United States, but assembling those components into the patented invention outside the United States, was not "making" (and therefore not infringement) under section 271(a). 406 U.S. at 527-29. This loophole allowed copiers to circumvent infringement merely by finalizing assembly outside the country.

> In response to *Deepsouth*, Congress enacted section 271(f):
>
> (1) Whoever without authority supplies ... in or from the United States all or a substantial portion of the components of a patented invention ... in such a manner as to actively induce the combination of such components outside of the United States ***in a manner that would infringe the patent if such combination occurred within the United States***, shall be liable as an infringer.
>
> (2) Whoever without authority supplies ... in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple or commodity of commerce ... ***intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States***, shall be liable as an infringer.

35 U.S.C. § 271(f) (emphasis added). There is no question that the unauthorized assembly within the United States of computer hardware and software components into a patented

invention constitutes infringement under 271(a). *See, e.g., Eolas*, 274 F. Supp. 2d at 973 ("Microsoft is right when it says that to be liable under Section 271(a), all of the parts that must be put together in order for Internet Explorer to become an 'operable assembly' includes its installation onto the hard drive of a computer."). The language of 271(f) plainly provides that, when a substantial portion of those components were supplied from the United States, that same assembly outside the United States still constitutes infringement. 35 U.S.C. § 271(f) ("in a manner that would infringe the patent if such combination occurred within the United States").

> The legislative history of section 271(f) also supports such a reading:
>
> > Part of the subcommittee's job is to secure for the owners of intellectual property, including patent holders, a ***workable, efficient, and vigorous set of laws to protect their creations***. ...[W]ithout enactment of these housekeeping-oriented measures, ***the patent system would not be responsive to the challenges of a changing world*** and the public would not benefit from the release of creative genius. ... Section 101 [of the Bill] makes two major changes in the patent law in order to avoid encouraging manufacturing outside the United States. ... [Section 271(f)] will prevent ***copiers*** from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to [*Deepsouth*] concerning the need for a legislative solution to close a loophole in patent law.

(Microsoft's Br. Ex. 2) Patent Law Amendments Act of 1984, Congressional Record, H10525 (Oct. 1, 1984) (emphasis

added). Nothing in the language of section 271(f) or its legislative history indicates that patented inventions that have a software component are excluded from what Congress intended to be a "workable, efficient, and vigorous set of laws to protect [these] creations." *See id.; see also W.R. Grace & Co. v. Intercat, Inc.*, 60 F. Supp. 2d 316, 321 (D. Del. 1999) ("The plain language of the statute limits its application only to a 'component of a patented invention.' Nowhere in the statute or its legislative history is there a limitation to components of machines and other structural combinations. A contrary holding, refusing to apply the statute to chemical compositions, would be tantamount to legislating additional language to a statute."). To the contrary, excluding protection for inventions using software "would not be responsive to the challenges of a changing world" (*see* Cong. Rec. H10525, Microsoft's Br. Ex. 2), as computerized inventions with software have become increasingly important since enactment of section 271(f).

Microsoft's proposed interpretation of section 271(f) does not comport with the language of the statute or its legislative history, and the Court should deny Microsoft's motion.

B. The Federal Circuit Has Approved of Section 271(f) Claims Against Infringing Software.

Microsoft's interpretation of section 271(f) also disregards Federal Circuit case law on this issue. In *Southwest Software*, the Federal Circuit approved of 271(f) claims against infringing software. 226 F.3d at 1298-99.

The technology at issue in *Southwest Software* was designed to enhance the quality of printed images. The patents-in-suit were directed to methods and devices for calibrating the intensity of images output from a computerized

imagesetter. *Id.* at 1283-86. The accused products were (1) two versions of image processing *software* with a built-in calibration feature, and (2) an imagesetter that included the accused software. *Id.* at 1287. At the close of the evidence at trial, the court granted judgment of non-infringement as a matter of law as to the two apparatus claims at issue. *Id.* at 1288. As for the remaining method claim, the jury returned a verdict of direct infringement, inducement, contributory infringement, and infringement under 271(f). *Id.*

On appeal, the Federal Circuit vacated the district court's judgment of non-infringement of the two apparatus claims. *Id.* at 1298-99. The record did not reflect any claim construction or analysis by the district court of a particular disputed claim limitation, so the Federal Circuit was unable to review the decision of the court on that issue. Consequently, the Federal Circuit remanded the case for further proceedings on the infringement issue, *including infringement under 271(f)*. *Id.* Thus, the Federal Circuit necessarily found that 271(f) claims were appropriate in cases involving software. *See id.* at 1298-99. Moreover, the Federal Circuit explicitly noted that the infringing software was a "device." *Id.* at 1288.

It is clear from *Southwest Software* that a cause of action lies under section 271(f) when software is a substantial component of a patented invention and is exported from the United States for combination with other components outside the United States. *Id.* This is the exact issue presented by Microsoft's present motion *in limine*. Under *Southwest*

Software, AT&T has a valid 271(f) claim, and Microsoft's attempt to preclude that claim should be rejected.[2]

C. Under the Case Law and Patent Office Rules, Software Is a Device or Apparatus That May Be a Component of a Patented Invention.

Microsoft's position that software is nothing more than "intangible information" also directly contradicts established law and the rules of United States Patent and Trademark Office. To begin with, the Federal Circuit's case law makes clear that software to be run on a computer constitutes a patentable ***apparatus***. *See, e.g., In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994). In *In re Alappat*, the Federal Circuit explained why software code is patentable subject matter:

> We have held that such programming creates a new ***machine***, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software. ... Consequently, a computer operating pursuant to software may represent patentable subject matter,

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[2] Microsoft cites to *dicta* in *Bayer AG v. Housey Pharm., Inc.*, 340 F.3d 1367 (Fed. Cir. 2003), for the proposition that 271(f) does not apply to software. As explained in detail below, Microsoft's interpretation of *Bayer* is wrong. Moreover, the panel decision in *Bayer* cannot overrule *Southwest Software* because only the *en banc* Federal Circuit can overrule another panel's decision. *Tate Access Floors, Inc. v. Interface Architectural Res., Inc.*, 279 F.3d 1357, 1366 (Fed. Cir. 2002); *see also id.* ("upon direct conflict between Federal Circuit decisions, the precedential decision is the first") (citations and internal quotation marks omitted).

> provided, of course, that the claimed subject matter meets all the other requirements of Title 35.

Id. at 1545 (emphasis added). The Rules of the Patent Office are consistent with this holding:

> [A] claimed computer-readable medium encoded with a computer program is a computer ***element*** which defines ***structural and functional*** interrelationships between the computer program and the rest of the computer which permit the computer program's ***functionality*** to be realized, and is thus statutory. ... ***Computer programs are often recited as part of a claim.*** Office personnel should determine whether the computer program is being claimed as ***part of an otherwise statutory manufacture or machine.*** In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. ... When a computer program is recited in conjunction with a physical structure, such as a computer memory, Office personnel should treat the claim as a ***product claim.***

MPEP § 2106, at 2100-13 (emphasis added). Thus, Microsoft's position that software is nothing more than "intangible information"—and therefore cannot be a component under 271(f)—is nonsense.

Not one of the reported federal court decisions citing to section 271(f) remotely supports Microsoft's position that software cannot be a component of a patented invention under that section. In fact, several decisions—including two cases in which Microsoft was the defendant—hold to the contrary. *See, e.g., Southwest Software*, 226 F.3d at 1298-99; *Imagexpo v. Microsoft*, 2003 U.S. Dist. LEXIS 15139, at *4;

Eolas Tech. v. Microsoft, 274 F. Supp. 2d at 974; *NTP*, 261 F. Supp. 2d at 431. In *Imagexpo*, Microsoft filed a motion *in limine* similar to the motion at issue here, seeking to exclude damages under section 271(f) on units of NetMeeting exported overseas on golden master discs for the express purpose of combining the code with other apparatuses (namely CD-ROMs and computers) to form apparatuses that infringed the patent-in-suit. 2003 U.S. Dist. LEXIS 15139, at *2-4. The court rejected Microsoft's arguments, noting "the code itself is a patentable apparatus" and holding that the golden master and code constitute "components" under section 271(f). *Id.* at *4, *8.

In *Eolas*, as here, the patentee sought damages under section 271(f) for Microsoft's distribution of Windows products on golden master discs to foreign OEMs. 274 F. Supp. 2d at 973. The district court rejected arguments similar to those Microsoft advances here, and concluded that software in a computer product "is, in law, the legal equivalent of a piece of computer hardware and not the legal equivalent of a chemical formula." *Id.* at 974.

The products at issue in *NTP* were the defendant's popular Blackberry wireless, handheld email/paging devices and its wireless email/paging transmission network. 261 F. Supp. 2d at 426. The district court granted summary judgment of infringement by the handheld devices under section 271(f):

> [Defendant] supplies memory and ***application programs*** of an RF device, ***which are components*** that are especially adapted for use in the BlackBerry Pager. These components are combined with the Intel processor outside the United States when the pagers are manufactured, in such a manner that would infringe Claim 248 if such combination occurred

> inside the United States, causing infringement under § 271(f).

Id. at 431. (emphasis added). The *NTP* court also granted summary judgment of infringement under 271(f) as to the defendant's transmission network, ironically holding that Microsoft's Exchange Server software was one of the components of the system that the defendant combined outside the United States that gave rise to liability under section 271(f). *Id.* at 436-37.

Contrary to Microsoft's assertion (Microsoft's Br. at 10), the Federal Circuit's decision in *Bayer AG v. Housey Pharmaceuticals, Inc.*, 340 F.3d 1367 (Fed. Cir. 2003), does not require a different result. The *Bayer* court addressed only the interpretation of section 271(g)—which is directed only to importation into the United States of products produced by patented processes—and not an interpretation of section 271(f). *Id.* at 1371. Indeed, the only reference to section 271(f) in *Bayer* is *dicta* explaining that Congress's intent in defining the two different acts of infringement in sections 271(f) and (g) was to avoid encouraging manufacturing outside the United States. *Id.* at 1374. Nowhere did the court apply its interpretation of section 271(g) to 271(f). *See generally id.*

Moreover, the "information" at issue in *Bayer* was fundamentally different from the software at issue here. The information in *Bayer* was data generated from a patented method to identify whether a given substance had a particular property (namely, whether that substance activated or inhibited protein activity in a cell). *Id.* at 1369. This data could be used to identify effective drugs for treating diseases. *Id.* at 1370. The patentee alleged that Bayer used the patented process outside the United States, imported into the United

States the data generated from that process, identified effective drugs from that data, and manufactured those drugs in the United States. *Id.* The Federal Circuit held that importation of that data did not infringe the method patent under section 271(g). *Id.* at 1377-78. The crux of the court's decision was that section 271(g) was directed towards articles of manufacture, and not data or "information" used to identify those articles. *Id.*

The result in Bayer makes sense because data or "information" about a substance's properties alone is not patentable. *See Diamond v. Diehr*, 450 U.S. 175, 185 (1981) ("Excluded from such patent protection are *laws of nature, natural phenomena*, and abstract ideas.") (emphasis added). As explained in detail above, however, because software on a computer-readable medium (such as the golden masters) is a computer element defining structural and functional interrelationships between the software and the computer, the software can be part of a patentable manufacture or machine, and the software can be patented itself. Thus, the *Bayer* court's treatment of imported information under section 271(g) has no bearing on the question of whether software can be a component of an infringing device under section 271(f)—a question answered in the affirmative by every court that has addressed it.

IV. CONCLUSION

The law plainly recognizes that software can be a component of a patented invention or of an infringing device. Microsoft's interpretation of section 271(f) would create the absurd result that, while assembly of computer products in the United States can infringe under section 271(a), an infringer can assemble those exact same products outside the United States and yet circumvent infringement merely by exporting

the software that defines the structure and function of those products. Such piracy is exactly what section 271(f) was designed to prevent. Accordingly, the Court should deny Microsoft's motion *in limine* and allow AT&T's claims under 271(f) to be heard by the jury.

Dated: December 1, 2003

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No. 05-1056

IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Petition For A Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

SUPPLEMENTAL BRIEF FOR PETITIONER

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RULE 29.6 STATEMENT

The corporate disclosure statement included in the petition for a writ of certiorari remains accurate.

SUPPLEMENTAL BRIEF FOR PETITIONER

Respondent's supplemental brief contains no new matter, only additional argument. It is an unauthorized surreply on the merits and should be stricken. *See* S. CT. R. 24.6.

1. This Court's Rule 15.8 permits a party to file a supplemental brief to "call[] attention to new cases, new legislation, or other intervening matter not available at the time of the party's last filing." S. CT. R. 15.8. Respondent's supplemental brief cites no new decisions, legislation, legal authority, or factual developments arising after the filing of the brief in opposition. It simply purports to respond to the characterization of the record below in Microsoft's reply. But this Court has never, to the knowledge of counsel for petitioner, viewed the filing of a reply brief or the arguments therein as an "intervening matter." *Cf. Bd. of License Comm'rs v. Pastore*, 469 U.S. 238, 240 (1985) (per curiam) (explaining that a supplemental brief is appropriate where it brings to the Court's attention intervening matters that may have mooted a case). It cannot be that any perceived mischaracterization of law or fact in a reply brief constitutes such a development. Otherwise, every reply brief would spawn a surreply couched as a supplemental brief, and rejoinders to those surreplies. Respondent's supplemental brief should therefore be stricken.

2. If this Court were to accept respondent's supplemental brief as permissible under Rule 15.8, its additional arguments in support of its asserted alternative ground for the decision below are without merit and should be rejected. As discussed in Microsoft's reply brief (at 6), any questions concerning the correct interpretation of "component" and "supplie[d]" in Section 271(f)(2) would be "fairly included" within the questions presented. An "answer to the question [of Section 271(f)(2)'s scope] would follow inexorably from [the Court's] discussion" of Section 271(f)(1), *United States*

v. Zolin, 491 U.S. 554, 564 n.8 (1989), because the identical contested "component" and "supplie[d] . . . from the United States" language is found in *both* Section 271(f)(1) and Section 271(f)(2). Respondent apparently no longer disputes this point. This case is therefore a perfectly appropriate vehicle for authoritatively construing this language of Section 271(f) and resolving an issue of exceptional importance to the future of the U.S. software industry.

3. Moreover, respondent's assertions that Microsoft mischaracterized the record below are utterly baseless. Respondent identifies several fragments of the record that supposedly bolster its claim that the courts below concluded that Microsoft was liable under both Section 271(f)(1) and Section 271(f)(2). Of course, the record below speaks for itself, the Court is more than capable of evaluating it independently, and a chapter-and-verse refutation of respondent's belated assertions is neither necessary nor appropriate at this stage in the proceedings. It is a sufficient answer simply to note that respondent nowhere disputes that Section 271(f)(2) requires a finding that the "component" "supplie[d] . . . from the United States" is "especially made or adapted for use in the patented invention," 35 U.S.C. § 271(f)(2), and respondent has not identified a single such finding.[1]

---

[1] To the extent that respondent now contends that the relevant "component" that Microsoft "supplie[d] . . . from the United States" was not the Windows object code, but instead, some particular portion of that object code, *see* Supp. Br. of Resp. 4 n.2, that new argument cannot be reconciled with the stipulated facts. *See* Pet. App. 46a ("AT&T alleges, and Microsoft disputes, that the 'golden master disks' . . . of Windows object code constitute 'components' within the meaning of 35 U.S.C. 271(f). . . . *The parties agree that, other than the 'golden master disks' . . . of Windows object code, Microsoft does not supply any 'component' from the United States for assembly abroad.*") (emphasis added). The new argument moreover fails as a legal matter. The substantial noninfringing use inquiry focuses on *all* of a device's functions, not just on the one capable of infringing a patent. *See Hodosh v. Block Drug Co.*, 833 F.2d 1575, 1578 (Fed. Cir. 1987).

The fragment that respondent culled from the district court's opinion—"[h]ere, it is undisputed that Microsoft's object code is especially made and supplied from the United States for use in its Windows operating system" (Pet. App. 27a)—offers no support for respondent's position. The undisputed (and unsurprising) fact that Microsoft's object code is especially made "for use in its Windows operating system" hardly proves—in fact, does not even remotely suggest—that Windows is especially made for use *in AT&T's patented invention*. Nothing in respondent's most recent submission alters the fact that "respondent did not allege, the district court did not find, and Microsoft did not stipulate that Windows was 'especially made' for use in respondent's patented invention." Reply Br. 5. Accordingly, there could be, and there has been, no Section 271(f)(2) liability.

CONCLUSION

This Court should strike the Supplemental Brief of Respondent and grant the petition for a writ of certiorari.

Respectfully submitted.

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April 14, 2006

No. 05-1056

IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORP.,
Respondent.

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

SUPPLEMENTAL BRIEF FOR RESPONDENT IN RESPONSE TO BRIEF OF THE UNITED STATES

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RULE 29.6 STATEMENT

The Rule 29.6 statement included in the respondent's brief in opposition remains accurate.

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Respondent AT&T Corp. respectfully submits this supplemental brief in response to the brief filed by the Solicitor General on September 29, 2006. *See* Sup. Ct. Rule 15.8.

SUMMARY

1. Although the government ultimately disagrees with the judgment below, it supports the Federal Circuit's analysis on what should be the dispositive issue in this case. Addressing the first question presented in the petition, the Solicitor General recognizes that "intangible software"—a sequence of 1s and 0s—can be a "component" of a patented invention under 35 U.S.C. § 271(f). U.S. Br. 10. Given that answer, the only remaining question is straightforward: Did Microsoft *supply* the "intangible software" at issue here to its foreign contractors with the intent that it would be "combin[ed]" with millions of computers "in a manner that would infringe [AT&T's] patent if such combination occurred within the United States"? 35 U.S.C. § 271(f)(1); *see also id.* § 271(f)(2). That is precisely what Microsoft did, and the decision below is thus entirely correct.

The government reaches a contrary conclusion only because, in answering the *second* question presented in the petition, it inexplicably forgets its own answer to the *first* question presented: that the "component" at issue is "intangible software" (U.S. Br. 10), not the particular physical media (master disks, electromagnetic impulses, or hard drives) on which the software is transmitted and stored. The question in this case is not whether Microsoft has supplied foreign end users with "copies" of hard drives containing the relevant object code, but whether Microsoft has supplied the object code itself in the expectation that it would be combined with computers abroad. This basic misunderstanding pervades the government's brief. Moreover, the government's various policy rationales for artificially narrowing Section 271(f) are unsound on the merits and, in any event, misdirected. Congress, not the Judiciary, should resolve the complex current debate about the net effect of Section 271(f) on U.S. economic interests.

2. Quite apart from the correctness of the Federal Circuit's decision, certiorari is unwarranted for three additional reasons. First, as the Solicitor General acknowledges, Congress is currently considering legislation that, if enacted, would repeal Section 271(f) altogether and could require the Court to dismiss the writ as improvidently granted before it could decide this case on the merits. Second, the case law concerning Section 271(f)—and particularly Section 271(f)(2)—remains embryonic. Given the technical and economic complexity of the policy issues presented here, the Court should postpone review until after the lower courts have developed a body of case law addressing the application of this statutory provision across a range of factual contexts.

Third, it is by no means clear that the second question in the petition has much real-world significance. For example, regardless of how Section 271(f) is interpreted, it is undisputed that Microsoft separately infringed AT&T's patent under 35 U.S.C. § 271(a) by manufacturing and testing infringing devices in the United States. Microsoft must fully compensate AT&T for all foreseeable damages flowing from that infringement, including Microsoft's subsequent exploitation of its U.S.-tested product worldwide, and must place AT&T in the position it would have occupied but for Microsoft's original violation of Section 271(a). In this and other cases, a patentee's ultimate recovery for infringement under Section 271(a) would often approximate the recovery available under the Federal Circuit's interpretation of Section 271(f).

DISCUSSION

I. The Solicitor General's Answer To The First Question Presented Compels The Federal Circuit's Answer To The Second

1. AT&T agrees with the Solicitor General that Section 271(f) applies to all "components" of a patented invention, "not only tangible components." U.S. Br. 9; *see also Eolas Techs. Inc.* v. *Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005). The Solicitor General correctly rejects Microsoft's attempt to exempt all "intangible soft-

ware" components from Section 271(f). U.S. Br. 10. The Solicitor General likewise explains that Microsoft's analogy to "design information" and "blueprints" makes no sense because, unlike software, they are not themselves "combined" into any infringing product. *Id.* at 8. AT&T therefore agrees with the Solicitor General that the first question presented does not warrant this Court's review.

Once the first question is resolved as the Solicitor General advocates, the second question is simple: Did Microsoft "suppl[y]" the software—the Windows object code incorporating the speech coder/decoder—to foreign computer manufacturers for "combination" with other components into devices that, if made in the United States, would infringe AT&T's patent? 35 U.S.C. § 271(f). There is no more straightforward way to describe what Microsoft has done. To "supply" means to "make available for use; provide" or to "furnish or equip with." American Heritage Dictionary 1222 (2d coll. ed. 1991). Here, the Windows software—an intangible sequence of 1s and 0s—is present in the foreign-made computers *only* because Microsoft "provided" or "furnished"—in a word, *supplied*—it from the United States, via golden master disk or electronic transmission.[1]

Although the government pays lip service to "the statutory text" (U.S. Br. 11), it offers no actual textual analysis of the word "supplied." Nor does it address the many cases in which courts and, indeed, Microsoft's own patents refer to the transmittal of software code as "supplying" software. Opp. 17-18. Instead, it rejects the Federal Circuit's conclusion only because, in turning from the first question presented in the petition to the second, it forgets its own characterization of the "component" at issue. Rather than ask

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[1] The Solicitor General's suggestion that the Federal Circuit "all but acknowledged" that Microsoft did not "supply" the software from the United States (Br. 13) simply misconstrues the Federal Circuit's language. The Federal Circuit followed an interpretation of "supplied" that comported with the ordinary meaning of the word, the business practices of the software industry, the purposes of the statute, and the need to avoid absurd results. Pet. App. 6a-10a.

whether Microsoft supplied *software*—intangible 1s and 0s—for combination with computers abroad, the government asks whether Microsoft supplied individual "copies" of "physical[] embodi[ments]" of software "in the varied orientation of particles in the magnetically sensitive coating on the surface of the hard disk platters." U.S. Br. 9; *see also id.* at 10 (heading B), 12-13 & n.2. But as the government (correctly) recognizes earlier in its brief, the issue is whether Microsoft supplied the Windows object code, a binary sequence of numbers that "lacks physical existence." *Id.* at 8-9. The issue is *not* whether Microsoft supplied each of the individual physical containers in which that code is stored and transmitted.

Indeed, the Solicitor General's approach would carve out an atextual and arbitrary "software exception" to the scope of Section 271(f), given that *every* provision of software necessarily involves "copying" it, in the sense of "physically embod[ying]" it in a new medium such as a new hard drive. U.S. Br. 9. But there is absolutely no indication that Congress meant to treat software—of which it was clearly aware when it enacted Section 271(f)—any differently from any other components of patented inventions.

Nor is there any merit to the Solicitor General's apparent suggestion (Br. 12) that Section 271(f) narrowly codifies the position of the dissent in *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972). While *Deepsouth* was the catalyst for the enactment of Section 271(f), "statutory prohibitions often go beyond the principal evil to cover reasonably comparable evils, and it is ultimately the provisions of our laws rather than the principal concerns of our legislators by which we are governed." *Oncale* v. *Sundowner Offshore Servs., Inc.*, 523 U.S. 75, 79 (1998). Indeed, Section 271(f) *necessarily* creates patent liability for a range of conduct beyond the type of activity addressed in *Deepsouth*. For example, under Section 271(f)(2), a defendant need not supply a "substantial portion" of an infringing product's components, nor need the component that *is* supplied be combined abroad to create an infringing product. *See Waymark Corp.* v. *Porta Sys. Corp.*, 245 F.3d 1364, 1367-1368

(Fed. Cir. 2001). Because Section 271(f) cannot be construed as simply a narrow response to *Deepsouth*, that case cannot provide a basis for carving arbitrary exceptions from the statutory language.

In any event, the Solicitor General is wrong to claim that the Federal Circuit's holding "den[ies] companies that design software in the United States," unlike companies in Deepsouth's position, "*any* avenue of competing abroad without the risk of massive patent liability under United States law for foreign sales." U.S. Br. 15. U.S. software manufacturers can still perform much of the fundamental research that goes into software development and, without fear of liability, convey their ideas to foreign manufacturers for the creation of software that, if combined with a computer in the United States, would constitute an infringement under Section 271(a). The Federal Circuit does not preclude a company in Microsoft's position from providing foreign companies with technical specifications—the software equivalent of blueprints—for particular types of software programs. *See Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004). What Microsoft may *not* do is what it did here: supply the actual software that will itself be "combined" with devices that would infringe patents if manufactured in the United States.

2. The government's reliance on the "presumption against extraterritorial application" (U.S. Br. 16-17) is misplaced for three reasons. First, Microsoft has been held liable not for conduct performed abroad, but for conduct performed in the United States with the knowledge that the conduct may have particular consequences abroad. The domestic character of the infringement is particularly clear under Section 271(f)(2), which makes a company liable for sending specially-designed components out of the United States with the *intent* that they be combined in a manner that would infringe a U.S. patent, regardless of whether the components actually *are* so combined. *See Waymark Corp.*, 245 F.3d at 1367-1368.

Second, the presumption against extraterritoriality is designed for the typical statute in which Congress is silent

on the question of foreign applicability. It makes little sense to invoke that presumption as a basis for disregarding the language of a statute that, like this one, was enacted for the *sole and express purpose* of addressing the interplay between U.S. and foreign law. The very premise of Section 271(f) is that, in the circumstances defined by that provision's plain language, U.S. patentees should *not* have to rely exclusively on foreign patent protections, which would require the patentee to assume prohibitive costs to prosecute and enforce patents in scores of foreign jurisdictions, all simply to address *domestic* activity by U.S. companies like Microsoft that supply components of the patented invention from the United States.

Third, there is likewise no empirical basis for the Solicitor General's suggestion (Br. 17) that U.S. patentees could in fact secure sufficient protection simply by obtaining patents abroad, for "U.S. intellectual property laws are often more protective than those of other countries." *See* Curtis A. Bradley, *Territorial Intellectual Property Rights in an Age of Globalism*, 37 Va. J. Int'l L. 505, 506-507 (1997). And to the extent that some foreign jurisdictions *do* provide as much patent protection as U.S. law, as the United States has long urged them to do, companies in Microsoft's position could hardly complain about the Federal Circuit's decision as a policy matter, for such companies would face exactly the same liability abroad that they face in United States under the Federal Circuit's construction of Section 271(f). The only difference is that they would face such liability without imposing needless transaction costs on holders of U.S. patents (in the form of prosecuting foreign patents and securing foreign judgments). Neither Microsoft nor the Solicitor General identifies any neutral reason for imposing such economic waste on the developers of intellectual property.

3. The Solicitor General's policy concerns about the decision below are similarly without merit. The Solicitor General speculates, without any clear foundation, that applying Section 271(f) as written "*could* ultimately" lead some software companies to relocate operations abroad. Br. 18 (emphasis added). As an initial matter, this argument quarrels

not so much with the Federal Circuit's decision as with Congress's decision to enact Section 271(f) in the first place. No matter how it is interpreted, that provision has always presented the hypothetical risk that manufacturers of "components" would move their operations offshore. *See* Donald S. Chisum, *Normative and Empirical Territoriality in Intellectual Property: Lessons from Patent Law*, 37 Va. J. Int'l L. 603, 607 (1997) (calling for repeal of Section 271(f)). Congress nonetheless decided to protect U.S. patentees from unfair competition by U.S. "component" manufacturers.

Furthermore, the Solicitor General's concern about offshore migration of *component* manufacturers focuses on only one isolated economic factor among many. The Federal Circuit's decision accomplishes the basic economic purpose of the patent laws: it encourages innovation in the U.S. by ensuring effective intellectual property protection, from which software developers (including Microsoft) unquestionably benefit.[2] The Federal Circuit's approach also removes the artificial incentives that Microsoft's position would give to *end-product* manufacturers (in this particular case, the foreign computer manufacturers) to locate their operations offshore in order to exploit Microsoft's proposed software exception to Section 271(f). Under Microsoft's position, any

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[2] As one senior U.S. executive recently testified:

> The software industry could achieve cost savings by moving its development and production facilities overseas, but it has chosen to remain in the United States and has flourished here, in no small part because the copyright, trade secret and judicial processes in the United States provide[] strong and effective protection for the intellectual property content of software products. There is no justification for letting them enjoy the benefit of our strong IP system for their own products while, at the same time, they are allowed to avoid exposure to other companies' patents when those same products are exported.

Committee Print Regarding Patent Quality Improvement: Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary, 109th Cong., 1st Sess. 202 (2005) (statement of Jack Haken, Vice President, Intellectual Property & Standards, U.S. Philips Corporation).

manufacturer that depends on U.S.-developed software gains substantial savings (*i.e.*, avoidance of patent royalties) by locating its manufacturing facilities abroad. A proper construction of Section 271(f) levels the playing field among jurisdictions by ensuring that patent-related costs will be the same wherever the manufacture occurs. *See* 130 Cong. Rec. H10525, *reprinted in* 1984 U.S.C.C.A.N. 5827 (stating that Section 271(f) was enacted "to avoid encouraging manufacturing outside the United States"). In sum, as U.S. executives have emphasized to Congress, there is no consensus about the net effect of 271(f) on U.S. economic interests.[3] The responsibility for resolving that empirical controversy rests with Congress, not this Court.

II. Certiorari Is Unwarranted For Additional Reasons Unrelated To The Merits

Even apart from the correctness of the Federal Circuit's decision on the merits, certiorari should be denied for three additional reasons. First, as the Solicitor General notes (Br. 19 n.4), Congress is considering a comprehensive patent reform bill that, among other things, would repeal Section 271(f) in its entirety. *See* Patent Reform Act of 2006, S. 3818, 109th Cong. § 5(f) (2006). Although AT&T and others vigorously oppose such a repeal, the pendency of this bill shows that Congress is fully capable of amending the patent laws if it reverses course and concludes that Microsoft's pol-

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[3] There is currently a sharp difference of opinion within the IP stakeholder community as to whether, in the future, Section 271(f) will result in a net increase or decrease in U.S. jobs. Those who favor its repeal argue that Section 271(f) discourages certain jobs (such as software design jobs) from remaining in the U.S., while opponents of the repeal just as passionately argue that Section 271(f) protects other kinds of jobs (such as assembly jobs) from foreign outsourcing.

Amendment in the Nature of a Substitute to H.R. 2795, the "Patent Act of 2005": Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property of the House Comm. on the Judiciary, 109th Cong., 1st Sess. 68 (2005) (statement of Phil Johnson, Chief Patent Counsel, Johnson & Johnson).

icy concerns (echoed here by the Solicitor General) are valid. It also shows that, if certiorari were granted, the writ might need to be dismissed as improvidently granted if Section 271(f) is in fact repealed before this case is decided.

Second, this Court's review of Section 271(f) would be premature. There are very few decisions interpreting that provision in general and Section 271(f)(2) in particular. That paucity of case law is significant because, as the Solicitor General acknowledges, similar Section 271(f) issues could arise in a host of different contexts, some involving software and some involving "other high-technology industries." U.S. Br. 18. If this Court were to intervene at this early stage in the judicial consideration of Section 271(f), it would pretermit the case-by-case analysis across a range of diverse technological settings that, over the long term, would likely produce the soundest body of precedent in a complex legal field.

Third, further consideration in the lower courts may well confirm that the parties' interpretive dispute about Section 271(f) has little ongoing practical significance in the first place, given the availability of alternative damages theories that could subject defendants in Microsoft's position to the same general degree of liability even if the decision below were reversed. For example, quite apart from Section 271(f), Microsoft indisputably infringed AT&T's patent under Section 271(a) by making and using an infringing device *in the United States* in the course of developing, testing, and debugging the Windows software. *See* Pet. App. 42a, 45a.[4] But for that enormously consequential threshold act of infringement, Microsoft would not have developed the final

[4] *See* 35 U.S.C. § 271(a) ("[W]hoever without authority makes, uses, offers to sell, or sells any patented invention, within the United States . . . infringes the patent."). Moreover, even apart from this threshold violation of Section 271(a), the Solicitor General appears to agree (Br. 16) that sending a golden master disk or an electronic transmission to a foreign computer manufacturer constitutes, under Section 271(f), at least "one act of supply." Even "one act of supply" renders the infringer liable for "damages adequate to compensate for the infringement." 35 U.S.C. § 284.

version of the software that it later supplied to its computer manufacturing customers in the United States and abroad.

A patentee that successfully claims infringement is entitled to "full compensation for 'any damages' [the patent owner] suffered as a result of the infringement," *General Motors Corp.* v. *Devex Corp.*, 461 U.S. 648, 654 (1983), a recovery measure that includes "any foreseeable lost profits" that the patentee would have earned "'but for' the infringement," *Grain Processing Corp.* v. *American Maize-Prods. Co.*, 185 F.3d 1341, 1349 (Fed. Cir. 1999). Thus, a defendant must make a plaintiff whole by placing it in the same position the plaintiff foreseeably would have occupied if the defendant had committed no infringement at all.[5] For that reason, it is far from clear that resolution of the legal issues presented in the petition will have "ongoing practical importance" (U.S. Br. 17), given these alternative doctrinal bases for the same damages awards that would be available under the Federal Circuit's interpretation of Section 271(f).

CONCLUSION

The petition for a writ of certiorari should be denied.

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[5] A plaintiff could be made whole in this respect not just under a "lost profits" theory of damages, but also under a "reasonable royalty" theory. 35 U.S.C. § 284. For example, in negotiating a reasonable royalty for Microsoft to license AT&T's patent in order to test Windows software in the United States for ultimate shipment abroad, AT&T naturally would have taken into account the amounts that Microsoft expected to gain from foreign sales of computers that included the U.S.-tested software. *See, e.g., Deere & Co.* v. *International Harvester Co.*, 710 F.2d 1551, 1558-1559 (Fed. Cir. 1983).

Respectfully submitted.

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QUESTIONS PRESENTED

In certain circumstances, Section 271(f) of the Patent Act prohibits the "suppl[y] * * * from the United States * * * [of] all or a substantial portion of the components of a patented invention * * * in such manner as to actively induce the combination of such components outside of the United States," as well as the "suppl[y] * * * from the United States [of] any component of a patented invention that is especially made or especially adapted for use in the invention." 35 U.S.C. 271(f)(1) and (2). For purposes of that statute, the questions presented are:

1. Whether software object code can be a "component" of a patented invention; and, if so,

2. Whether copies of software object code are "supplied" from the United States when those copies are created overseas by replicating a separate master version supplied from the United States.

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BRIEF FOR THE UNITED STATES AS AMICUS CURIAE SUPPORTING PETITIONER

INTEREST OF THE UNITED STATES

The question in this case is whether United States patent law restricts companies from sending master copies of their software overseas when those master copies are duplicated overseas and the foreign-made copies are used in foreign-made computers sold in foreign markets. The United States Patent and Trademark Office, which is responsible for granting and issuing patents and advising the President on issues of patent policy, 35 U.S.C. 2(a)(1) and (b)(8), has a substantial interest in the resolution of that question. The application of United States patent law to the participation of United States companies in foreign markets also raises issues concerning the competitiveness of American companies abroad and the respective roles of the United States' and other nations'

patent laws, issues of concern to the Department of Commerce. At the invitation of the Court, the United States filed a brief as amicus curiae at the petition stage of this case.

STATEMENT

1. "[W]hoever without authority makes * * * within the United States * * * any patented invention," is generally liable for patent infringement. 35 U.S.C. 271(a). In *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972), this Court held that a company did not violate that provision by manufacturing the component parts of a patented shrimp deveining machine in the United States and then shipping those parts overseas for final assembly. *Id.* at 523-524, 527-529. The Court explained that "it is not an infringement to make or use a patented product outside of the United States," *id.* at 527, and the patented invention (the shrimp deveining machine) was not made until its components were finally assembled abroad, *id.* at 528-529.

Congress responded by enacting 35 U.S.C. 271(f), which provides:

> (f)(1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

Patent Law Amendments Act of 1984, Pub. L. No. 98-622, § 101, 98 Stat. 3383 (35 U.S.C. 271(f)).

2. United States Reissue Patent No. 32,580 (the '580 patent) claims an apparatus for digitally encoding and compressing recorded speech. Respondent brought this action against petitioner in the United States District Court for the Southern District of New York, contending that computers loaded with copies of petitioner's Windows operating system infringe the '580 patent because Windows incorporates software code for encoding and compressing speech in the manner claimed by the '580 patent. Neither the Windows software nor a computer standing alone infringes the '580 patent; instead, the patent is infringed by a computer that has been loaded with the Windows software and is capable of performing as the patented speech processor. The parties entered into a stipulated judgment in which petitioner conceded that the '580 patent was valid, enforceable, and infringed. See Pet. App. 3a-4a.

The only issue on which the parties failed to reach agreement was petitioner's alleged liability under 35 U.S.C. 271(f) for Windows-based computers manufactured and sold overseas. The relevant facts on that point are undisputed. Petitioner conceives, writes, compiles, tests, and debugs its Windows operating system software in the United States. It then provides the operating system to foreign computer manufacturers in one of several ways. First, petitioner creates a limited number of "golden master disks" on which it stores the machine-readable binary object code for the Windows operating system.[1] In some cases, petitioner ships those golden master disks to foreign computer manufacturers, who replicate the object code on the master disks to create separate copies of the code and then install those copies on the computers they assemble. In other instances, petitioner ships golden master disks to foreign replicators, who make copies of the object code and ship those copies to foreign computer manufacturers, who install the copies on their computers. Alternatively, petitioner sometimes provides the Windows object code to foreign computer manufacturers and replicators via encrypted electronic transmission. The transmitted code is then decrypted and copied, and the copies are installed on foreign computer products. Pet. App. 45a-46a.

In each case, the computer hardware is manufactured overseas; the Windows operating system is installed overseas from copies of the object code that were created overseas; and the completed systems are sold overseas to overseas end-users. Pet. App. 45a-46a. The

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[1] Software in the form in which it is written and understood by humans is called "source code." To be functional, however, software must be converted (or "compiled") into its machine-usable version, which is called "object code." See Pet. App. 22a n.5.

golden master disk itself is "never installed on a computer that is then sold." *Id.* at 45a.

3. The district court held that petitioner is liable under Section 271(f) for all foreign sales of Windows-based computers. Pet. App. 21a-38a. After concluding that software can be a "component" for purposes of Section 271(f) because it is "well-established" in other contexts that "software can be a component of a patented invention," *id.* at 30a, the court went on to explain that "there is no limitation of the term 'components,' either in the statutory text or in the legislative history, to machines or other structural combinations," *id.* at 31a. The court also held that copies of the object code that are replicated overseas may be deemed supplied from the United States because "the object code is originally manufactured in the United States, and supplied from the United States to foreign [companies] with the intention of incorporating such software into foreign-assembled computers." *Id.* at 35a.

In light of the district court's decision, petitioner acquiesced in a stipulated judgment of liability and entered into a settlement with respect to damages, while reserving the right to appeal the district court's ruling on the Section 271(f) issue. Pet. App. 42a-43a.

4. In a divided decision, the court of appeals affirmed. Pet. App. 1a-19a.

a. Relying on its decision in *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, cert. denied, 126 S. Ct. 568 (2005), the Federal Circuit unanimously held that software code may be a component of a patented invention for purposes of Section 271(f). Pet. App. 4a; see *id.* at 11a (Rader, J., dissenting on other grounds). The court reasoned that "software code alone qualifies as an invention eligible for patenting," and noted that

Section 271(f)'s text is not limited to "patented 'machines' or patented 'physical structures.'" *Id.* at 4a (quoting *Eolas*, 399 F.3d at 1339).

A majority of the panel further held that copies of software that are created abroad by replicating a master version exported from the United States "have essentially been supplied from the United States" for purposes of Section 271(f). Pet. App. 7a. On the theory that "[c]opying * * * is part and parcel of software distribution," the court held that "for software 'components,' the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." *Id.* at 6a.

The majority expressed concern that a contrary holding would "emasculate § 271(f) for software inventions" because "[i]t is inherent in the nature of software that one can supply only a single disk that may be replicated * * * instead of supplying a separate disk for each copy of the software to be sold abroad." Pet. App. 6a n.2, 7a. In the court's view, petitioner's position would "permit[] a technical avoidance of the statute by ignoring the advances in a field of technology—and its associated industry practices—that developed after the enactment of § 271(f)." *Id.* at 9a-10a. If Congress's response to *Deepsouth* "is to remain effective," the majority asserted, it must "be interpreted in a manner that is appropriate to the nature of the technology at issue." *Id.* at 10a.

b. Judge Rader dissented. Pet. App. 11a-19a. Although he agreed with the majority that software code can be a component of a patented invention, *id.* at 11a, Judge Rader concluded that the majority erred by conflating copying software with supplying it, *id.* at 11a-13a. That software must be copied to be distributed, he

explained, "does not actually distinguish software components from physical components of other patented inventions. The only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport." *Id.* at 14a. The majority's reliance on the relative ease of copying software, he reasoned, is not a relevant distinction under Section 271(f), but instead "ignores this court's case law that refuses to discriminate based on the field of technology." *Ibid.*

Further, Judge Rader warned, the panel's decision threatens "endless liability in the United States under § 271(f) for products manufactured entirely abroad." Pet. App. 11a. Because "[n]othing in § 271(f) or its enacting documents expresses an intent to attach liability to manufacturing activities occurring wholly abroad," Judge Rader explained that respondent's remedy lies in "obtaining and enforcing foreign patents." *Id.* at 16a, 18a-19a.

SUMMARY OF THE ARGUMENT

Section 271(f) regulates the "suppl[y] * * * from the United States" of "components" of patented inventions. 35 U.S.C. 271(f)(1). Copies of computer software can constitute components of patented inventions, but petitioner did not supply the copies at issue here from the United States. Accordingly, petitioner is not liable under Section 271(f).

I. The court of appeals correctly held that copies of computer software can constitute components of patented inventions. A "component" is simply a part, element, or ingredient of an invention. A copy of petitioner's software that is loaded onto a computer is a part of respondent's patented invention, because the com-

puter cannot digitally encode and compress recorded speech, and thus does not infringe respondent's patent, unless and until a copy of the software is loaded onto it.

While petitioner argues that software is intangible design information that cannot be physically combined with other components, that argument misperceives the nature of the software component. Petitioner is correct that software code *in the abstract* is not a component. But a specific, machine-readable, physical *copy* of the software that is actually loaded onto a computer is a component, because it combines with the other components to form the patented invention.

II. Because computer software is a component in its physical embodiment, rather than in the abstract, it is clear that petitioner does not "suppl[y]" the components at issue "from the United States" within the meaning of Section 271(f). By its express terms, Section 271(f) is violated only when components are supplied from the United States and "*such* components"—*i.e.*, the very physical components actually supplied from the United States, not foreign-made copies thereof—are to be combined abroad to form the patented invention. Section 271(f) thus strikes a careful policy balance. It generally prevents companies from manufacturing the components of a patented invention in the United States for assembly overseas—conduct that is similar to actually making the patented invention in the United States. But the statute permits the manufacture and assembly of *identical* components overseas—conduct that is properly the domain of other nations' patent laws.

Here, it is undisputed that the only thing petitioner supplies from the United States is a golden master disk that is never installed on any of the computers at issue. Instead, copies made overseas from the golden master

are installed overseas in foreign-made computers for sale in foreign countries. Because petitioner does not supply those copies from the United States, it does not supply a component of the relevant computers from the United States, and it is not liable under Section 271(f).

The court of appeals nonetheless opined that foreign-made copies of software should be "deemed" supplied from the United States because computer software can be easily copied overseas, an "advance[] in a field of technology * * * that developed after the enactment of § 271(f)." Pet. App. 4a, 10a. The court's need to "deem" rather than find a key statutory element—supply from the United States—should have been a warning sign. The courts' task is to interpret the statute, not to update it. It may well be easier for software companies to replicate their components overseas than for some traditional manufacturing companies, but that fact does not justify the linguistic leap necessary to equate overseas copying with supply from the United States.

Nor does the court of appeals' revision of Section 271(f) support the statute's purposes. As noted, Congress was content to allow the manufacture of components abroad to be governed by the law of the place of manufacture. But the court of appeals' decision prevents overseas replication of software designed in the United States by prohibiting even a single transmission of a master copy abroad for copying. The court thereby produced a regime under which liability for foreign copying of patented components varies depending on the nature of the patented technology, and United States software developers are singled out for disfavored treatment.

Were there any remaining doubt about the proper interpretation of Section 271(f), the presumption against

extraterritorial application of United States law would resolve it, because the court of appeals' decision makes petitioner liable for foreign conduct—specifically, for each act of overseas software replication.

ARGUMENT

Section 271(f) prohibits, in certain circumstances, the "suppl[y] * * * from the United States" of a "component of a patented invention." 35 U.S.C. 271(f)(1) and (2). Petitioner sends master copies of software overseas, and copies made overseas from those masters are installed on foreign-made computers for sale in foreign countries. Pet. App. 45a-46a. On those facts, respondent can satisfy *either* the "component" *or* the "supplie[s] * * * from the United States" prong of Section 271(f), but not both. While the copies of the software that are actually installed on computers overseas are components of the patented invention, those copies are not supplied from the United States, but instead are made abroad. The only thing petitioner supplies from the United States—a master copy—is never installed on the foreign-made computers. As a result, petitioner does not supply any components of those computers from the United States.

I. SECTION 271(f) APPLIES TO ALL COMPONENTS OF PATENTED INVENTIONS, INCLUDING SOFTWARE COMPONENTS

The court of appeals correctly held that software can be a component of a patented invention. Pet. App. 4a (following *Eolas Techs. Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, 1338-1341 (Fed. Cir.), cert. denied, 126 S. Ct. 568 (2005)). The relevant component, however, is the actual, machine-readable, physical copy of the software in-

stalled on a particular computer, not the software in the abstract.

A. Software Falls Within The Ordinary Meaning Of The Term "Component"

Because Section 271(f) does not define the term "component," that term takes its "ordinary or natural meaning." *FDIC* v. *Meyer*, 510 U.S. 471, 476 (1994); accord *S.D. Warren Co.* v. *Maine Bd. of Envt'l Prot.*, 126 S. Ct. 1843, 1847 (2006). A "component" is ordinarily understood to be "a constituent part; element; ingredient." *The Random House Dictionary of the English Language* 419 (2d ed. 1987); see 3 *The Oxford English Dictionary* 620 (2d ed. 1989) (*OED*) ("A constituent element or part."); *Webster's New International Dictionary of the English Language* 547 (2d ed. 1958) (*Webster's*) ("A constituent part; an ingredient.").

The statutory context confirms that the term "component" takes its ordinary meaning here, because Section 271(f) refers to the overseas "combination of [the] components" of a patented invention. 35 U.S.C. 271(f)(1); see 35 U.S.C. 271(f)(2). A "combination" is a "union of elements." *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518, 528 (1972) (quoting *Leeds & Catlin Co.* v. *Victor Talking Mach. Co.*, 213 U.S. 301, 318 (1909)); see *Webster's* 533 ("a union or aggregate made by combining one thing with another"); 3 *OED* 514 ("[c]ombined state or union of two or more things"). Thus, a "component" is a part, element, or ingredient of an invention that is combined with the other parts, elements, or ingredients to form the completed invention.

Each copy of Windows that is actually loaded or installed onto a computer is a part, element, or ingredient of the patented invention. That is particularly clear

here. The foreign-made computers at issue lack the capability to encode and compress recorded speech, and thus do not constitute the "patented invention," unless and until they are loaded with an executable copy of the Windows software. See Pet. App. 3a. Thus, a software copy that is actually placed in a computer—and thereby combined with the other components—is an indispensable part, element, or ingredient of the patented invention. Indeed, computer texts commonly describe "software" as being a "component[]" of a computer system. *Dictionary of Computing* 426 (3d ed. 1990); see *Encyclopedia of Computer Science* 1599 (Anthony Ralston et al. eds., 4th ed. 2000) ("The word *software* was * * * coined to describe the non-hardware components of the computer."). Here, the installed Windows code "is not only a component, it is probably the key part of this patented invention." *Eolas*, 399 F.3d at 1339.

B. The Non-Patentability Of Software In The Abstract Does Not Prevent An Executable Copy Of Software Code From Being A "Component"

Petitioner correctly contends that software code, "uncoupled from any storage medium or computer," cannot be the subject of a patent. Pet. 3; see U.S. Pat. & Trademark Office, *Manual of Patent Examining Procedure* § 2106.01, at 2100-17 (8th ed., rev. 5, 2006) ("computer programs" and other "'descriptive material' are nonstatutory when claimed as descriptive material *per se*"). The non-patentability of software code *standing alone* has no bearing, however, on whether software can be a *component* of a patented invention under Section 271(f). Nothing in the Patent Act requires that each part of a claimed invention must be independently pa-

tentable before a patent will issue for the combination. See, *e.g.*, *Deepsouth*, 406 U.S. at 520-522.

Indeed, just three years before Congress enacted Section 271(f), this Court held that an invention was not unpatentable merely because it employed, as one step in its claimed process, a computer software program. *Diamond* v. *Diehr*, 450 U.S. 175, 187 (1981). The Court explained that an invention is not rendered unpatentable "simply because it uses a * * * computer program, or digital computer." *Ibid.*; see *Parker* v. *Flook*, 437 U.S. 584, 590 (1978) ("[I]t is * * * clear that a process is not unpatentable simply because it contains * * * a mathematical algorithm."). There is no indication that Congress intended to depart from that understanding when it enacted Section 271(f). Cf. *Miles* v. *Apex Marine Corp.*, 498 U.S. 19, 32 (1990) ("We assume that Congress is aware of existing law when it passes legislation."). Regardless of whether software code is independently patentable, therefore, software can be a part, element, or ingredient of a patented invention.

C. A Physical Copy Of Executable Software Code Can Be A "Component" Within The Meaning Of Section 271(f)

Petitioner also argues (Pet. 12) that software is nothing more than "design information" analogous to the blueprints of a machine. To the extent that petitioner means that software in the abstract cannot be a component of a patented invention, the United States agrees. But the specific physical copy of the executable software code that is actually installed on a computer (and thereby completes the assembly of the patented combination) is a component.

Petitioner is correct (Pet. 12, 16 n.2) that for purposes of Section 271(f), software in the abstract is simi-

lar in some respects to the blueprints of a machine or the sequence of perforations on a player piano music roll. If the code or sequence for the Windows object code were written on paper or memorized in someone's head as a "sequence of 1s and 0s" (Resp. Supp. Br. 1), it would not be a component of a patented invention, because the mere representation or description of the software would not form the patented invention when combined with a computer. Instead, it would simply be design information from which a component—an actual copy of the executable machine code—could be created. But when someone physically places a machine-readable copy of the object code into a computer, and thereby combines the copy with the computer, that copy—as opposed to the abstract design or representation of the software—becomes a part, element, or ingredient of the patented invention. The same would be true of the physical music roll for a player piano, as opposed to the sequence of perforations in the abstract.

The same basic distinction addresses petitioner's other arguments. Petitioner argues (Pet. 15-17) that software cannot be a "component" because it is "intangible information" rather than a "physical product." While the abstract concept or design of the Windows software lacks physical existence, each machine-readable copy of the object code that is created overseas and then installed in a computer overseas unquestionably has physical existence. Software resident in a computer's random-access memory, for instance, has a detectable physical existence in the form of the presence or absence of electrons at different locations on millions of capacitors located on the computer's memory chips. See, *e.g.*, Jeff Tyson & Dave Coustan, *How RAM Works* (visited Dec. 14, 2006) <http://computer.howstuffworks.

com/ram.htm>. Similarly, software residing in a computer's hard drive is physically embodied in the varied orientation of particles in the magnetically sensitive coating on the surface of the hard disk platters. See, *e.g.*, Jon L. Jacobi, *How It Works: Hard Drives* (visited Dec. 14, 2006) <http://www.pcworld.com/article/id, 18693-page,2/ article.html>. Indeed, it is only because the object code has physical existence that the computer's central processing unit is able to detect and implement the software.

Nothing in Section 271(f) imposes a further "tangibility" limitation. The components of the shrimp deveining machine at issue in *Deepsouth* were tangible in the sense that they were detectable by the sense of touch, but Congress did not confine Section 271(f) to the tangible parts of patented inventions any more than it restricted the statute to shrimp deveining machines. By its plain terms, Section 271(f)(1) applies to all "components" of a patented invention, while Section 271(f)(2) applies to "any" component of such an invention—not only tangible components. 35 U.S.C. 271(f)(1) and (2); see *Eolas*, 399 F.3d at 1339; Pet. App. 4a.

Petitioner argues (Pet. 16) that because the statute refers to the "combination of * * * components," it is necessarily limited to tangible components, because intangible items cannot be combined with physical ones. As discussed, however, that contention misperceives the nature of the software component. It is true that the software in the abstract could not be combined with computer hardware to form the patented invention any more than blueprints could be combined with building materials to form a house. But physically placing an actual, machine-readable copy of the Windows object code in a computer to complete the patented system

does combine that software copy with the other components so as to make the patented invention.

II. SOFTWARE COPIES THAT ARE CREATED OVERSEAS ARE NOT SUPPLIED FROM THE UNITED STATES

Although the court of appeals correctly held that software can be a component of a patented invention, it erred in holding that the creation of software copies overseas by replication of a master version provided from the United States constitutes the "suppl[y]" of software "from the United States" within the meaning of Section 271(f). See Pet. App. 4a-11a.

A. Section 271(f) Governs Only The Supply Of Components From The United States For Assembly Abroad

Section 271(f) does not prohibit the manufacture of components overseas, the inducement of others to manufacture components overseas, or the assembly overseas of components that were made overseas. Rather, the statute prohibits only the supply of components "from the United States * * * in such manner as to actively induce the combination *of such components*"—*i.e.*, the very components the defendant supplied from the United States. 35 U.S.C. 271(f)(1) (emphasis added); see 35 U.S.C. 271(f)(2) (prohibiting supply from the United States of a component "intending that such component will be combined outside of the United States"). Conduct that merely induces the combination of *foreign-made* components in foreign countries does not violate Section 271(f), because "such components" were not themselves supplied from the United States—even if the design information and instructions for their production emanated from the United States. See *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113, 1115-1118 (Fed. Cir.), cert. denied, 543 U.S. 1003 (2004); *Rotec*

Indus., Inc. v. *Mitsubishi Corp.*, 215 F.3d 1246, 1258 (Fed. Cir. 2000).

The text of Section 271(f) thus makes clear that Congress struck a balance between the interests of domestic patent holders and the traditional "right of American companies to compete with an American patent holder in foreign markets," subject to the laws of the foreign markets. *Deepsouth*, 406 U.S. at 531. Section 271(f) generally prevents companies from manufacturing components of patented inventions in the United States for assembly overseas, but it leaves them free to manufacture and assemble *identical* components overseas. Regulating the manufacture of components in foreign countries is the domain of foreign, not United States, law.

That distinction is rooted not only in the statutory text, but also in Congress's intent to overrule *Deepsouth*. In *Deepsouth*, a manufacturer of shrimp deveining machines sought to avoid infringing a competitor's patent by shipping the component parts manufactured in the United States abroad and assembling the patented machine abroad. 406 U.S. at 523-524. If the manufacturer had assembled the machines in the United States, it would have been liable under 35 U.S.C. 271(a) for making a patented invention in the United States. This Court held, however, that the company was not liable because "it is not an infringement to make or use a patented product outside of the United States," 406 U.S. at 527, and the patented invention (the shrimp deveining machine) was not "made" until its components were actually assembled to complete the machine, *id.* at 528-529.

Four dissenting Justices argued that the "machine was *made* in the United States," and therefore infringed the patent, because the components were manufactured

in the United States and "everything was accomplished in this country except putting the pieces together as directed." *Deepsouth*, 406 U.S. at 533 (Blackmun, J., dissenting). The dissenters noted, however, that in their view "[t]he situation, perhaps, would be different were parts, or even only one vital part, manufactured abroad." *Ibid.* Their concern was protecting against "an infringer who *manufactures* in the United States." *Id.* at 534 (emphasis added; citation omitted).

When Congress responded by enacting Section 271(f), it agreed with the *Deepsouth* dissenters that the manufacture of component parts in the United States is sometimes so analogous to making the assembled patented invention in the United States as to warrant liability. See S. Rep. No. 663, 98th Cong., 2d Sess. 2-3 (1984). But Congress did not take the additional step of prohibiting companies based in this country from competing abroad by manufacturing component parts abroad or assembling foreign-made components abroad. As the Senate Report explains, "[t]he bill simply amends the patent law so that when components are supplied for assembly abroad to circumvent a patent, the situation will be treated the same as when the invention is 'made' or 'sold' in the United States." *Id.* at 3. Thus, "the bill provides that a product's patent protection cannot be avoided through the manufacture of component parts within the United States for assembly outside the United States." 130 Cong. Rec. 28,073 (1984) (statement of Rep. Kastenmeier); see S. Rep. No. 663, *supra*, at 6 (explaining that Section 271(f) prohibits "shipping overseas the components of a product patented in this country so that the assembly of the components will be completed abroad").

Contrary to respondent's suggestion (Resp. Supp. Br. 4-5), the government's view is not that Section 271(f) is limited to the specific facts of *Deepsouth*. Rather, the point is that Section 271(f) governs only the supply of components from the United States for assembly overseas, in order to prevent circumvention of the prohibition against making a patented invention in the United States. Nothing in the text, legislative history, or background of the statute suggests an intent to reach farther.

B. Copies Made In Foreign Countries Are Not Supplied From The United States

The court of appeals disregarded the limited scope of Section 271(f) by holding petitioner liable for inducing the combination, outside the United States, of foreign-made copies of computer software code with foreign-made computer hardware for sale in foreign countries. It is undisputed that the only thing petitioner provides from the United States is a golden master disk that "is never installed on a computer that is then sold." Pet. App. 45a; see *id.* at 47a. Because the master copies supplied from the United States are not installed on any of the computers at issue, petitioner has not supplied a component of those computers from the United States.

Respondent contends that software "is present in the foreign-made computers *only* because [petitioner] 'provided' or 'furnished'—in a word, *supplied*—it from the United States." Resp. Supp. Br. 3 (quoting *American Heritage Dictionary* 1222 (2d coll. ed. 1991)). But respondent glosses over a crucial point: The "it" that petitioner supplied from the United States is not the same "it" that is physically present in any of the foreign-made computers at issue, *i.e.*, is not a component within the

meaning of the statute. As discussed, the only thing petitioner furnishes or provides *from the United States* is a golden master that is not installed on any of the foreign-made computers at issue. The distinct physical copies that are installed in those computers (and constitute components of the patented device) are instead made in, and thus supplied from, foreign countries.

Respondent thus errs in contending (Resp. Supp. Br. 3) that the government "forgets its own characterization of the 'component' at issue" in concluding that petitioner does not supply components from the United States. To the contrary, the physical embodiment of the software code—as opposed to "the Windows object code, a binary sequence of numbers that 'lacks physical existence,'" *id.* at 4 (quoting U.S. Inv. Br. 8-9)—is precisely what is manufactured or copied abroad. A "binary sequence of numbers that lacks physical existence" may originate in the United States, but it is not a "component" of a patented invention that can be "combin[ed]" with other components to make the patented item, precisely because it "lacks physical existence." Only the physical copy of the machine-readable object code, not the abstract design or concept of the software, can qualify as a "component" the supply of which from the United States could give rise to liability under Section 271(f). See U.S. Inv. Br. 8-9 ("while the concept of the Windows software lacks physical existence, each copy of the object code that was created overseas and then installed in an allegedly infringing computer overseas unquestionably had physical existence").

Respondent's contrary position relies on conflating the master copy made in the United States with the copies made abroad, eliding the fact that they are separate and distinct physical components with separate physical

existence, and that the master copy is not itself installed on any computer abroad. Respondent argues (Br. in Opp. 18), for example, that "[t]he very same zeros and ones created in the U.S. by [petitioner's] programmers are installed on the foreign computers." But that is either legally irrelevant (to the extent respondent means only that the foreign-made copy is a perfect duplicate of the master copy) or factually incorrect (since the physical orientation of particles that embodies the object code in a particular foreign-made computer is plainly not composed of the same particles physically embodying that object code on the golden master). While the same *pattern* of zeros and ones (or, more precisely, the same pattern of electrical impulses that can be denoted by zeros and ones) is reflected on every computer that uses the Windows operating system, a different *copy* of that pattern is installed on each computer. Two copies of any item (such as a book or a player-piano music roll) may be identical, but that does not mean that supplying the first copy constitutes supplying the second.

Under respondent's contrary theory, when petitioner supplied a single master copy of Windows from the United States, petitioner in that instant also supplied from the United States every copy of Windows that would ever be made from that master in the future. There is no warrant for construing the statute to reach that absurd result. A copy installed on an overseas computer did not exist until it was created by replication overseas, and a component cannot have been supplied from the United States before it even existed. As Judge Rader explained in dissent below, "[a]s a matter of logic, one cannot supply one hundred copies * * * without first making one hundred copies." Pet. App. 13a.

Nor can one supply a component from a country in which it was never present. As the Federal Circuit noted in another context, Section 271(f) "is clear on its face. It applies only when components of a patent[ed] invention are physically present in the United States and then either sold or exported." *Pellegrini*, 375 F.3d at 1117. Because the copies at issue here were never physically present in the United States, but instead were made abroad, they were not supplied from the United States.

The court of appeals all but acknowledged as much by concluding that the foreign-made copies at issue here "may be *deemed* 'supplied' from the United States," and have "*essentially* been supplied from the United States." Pet. App. 4a, 7a (emphases added). But the role of the courts in applying Section 271(f) is limited to discerning whether the statute is *actually* satisfied, and does not extend to deeming the statute satisfied when it is, in fact, not.

C. Section 271(f) Does Not Distinguish Between Software Components And Other Components

The court of appeals was tempted to deem copies actually made abroad "supplied from the United States" because the modern "realities of software distribution" make the manufacture (*i.e.*, copying and distribution) of software abroad much less costly than the manufacture of traditional components. Pet. App. 7a; see *id.* at 6a n.2. However, Section 271(f)'s requirements apply equally to "any component of a patented invention," 35 U.S.C. 271(f)(2), without regard to the identity of the component or the cost of replication. See p. 15, *supra*. Any tailoring of the statute to deal with the "realities of software distribution" is a task for Congress.

1. The court of appeals asserted that Section 271(f) "should be construed broadly to effectuate its purposes" in order to ensure that the statute will "remain effective" in light of "advances in a field of technology * * * that developed after the enactment of § 271(f)." Pet. App. 9a, 10a (citation omitted). In patent cases, however, this Court has endorsed the opposite rule of construction: "It is our duty to construe the patent statutes as they now read * * *, and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress." *Flook*, 437 U.S. at 596; see *Deepsouth*, 406 U.S. at 531. The patent laws strike a "difficult," constitutionally mandated balance between rewarding innovation and not unduly stifling competition. See *Sony Corp. of Am.* v. *Universal City Studios, Inc.*, 464 U.S. 417, 428-429 (1984); U.S. Const. Art. I, § 8, Cl. 8. As new technologies have developed, "our patent and copyright statutes have been amended repeatedly" as Congress has discharged its constitutional responsibility to balance the competing interests in "fashion[ing] the new rules that new technology made necessary." *Sony*, 464 U.S. at 429-431.

Congress is fully aware of the ease with which software can be copied, and at times it has adopted special rules to modify intellectual property rights for computer software and other new technologies. See, *e.g.*, Digital Millennium Copyright Act, 17 U.S.C. 1201 *et seq.* The court of appeals erred by arrogating the authority to expand the statute's coverage beyond the limits of its text in order to ensure that Section 271(f) will "remain effective" for new technologies. Pet. App. 10a.

2. The statute's purposes do not in any event support imposing liability for overseas copying of software. The court of appeals sought to distinguish software from

traditional machine parts on the theory that "for software 'components,' the act of copying is subsumed in the act of 'supplying.'" Pet. App. 6a. There is, however, nothing unique about the fact that supplying software involves copying it. Numerous items might be replicated abroad with the aid of a master copy provided from the United States. Keys or machine parts might be copied from a master; chemical or biological substances might be created by reproduction; and paper products might be made by electronic copying and printing, to name just a few examples. The overall economic *result* may be the same whether the copying occurs in the United States or abroad, but the location of the relevant *conduct* is not, and Section 271(f) distinguishes between supply from the United States and supply from abroad.

As Judge Rader explained below, "[t]he only true difference between making and supplying software components and physical components is that copies of software components are easier to make and transport." Pet. App. 14a. It may well be that, because software is significantly easier to reproduce than most machine parts, software companies can comply with Section 271(f) more easily than many traditional manufacturers by supplying their components from abroad. But that does not justify the linguistic leap necessary to conclude that supplying one copy from the United States also constitutes supplying foreign-made copies from the United States. Indeed, the court of appeals identified only a difference in degree, not in kind, and there is no principled basis in the text of Section 271(f) for determining at what point overseas copying becomes sufficiently inexpensive that it should be prohibited by United States law. Such line-drawing requires a legislative judgment that Congress has not yet made and may never make.

Moreover, the court of appeals' decision does not promote, but instead distorts, the statutory policies. Congress did not seek to protect American patent holders from all competition by other American companies in foreign markets. Section 271(f) prohibits only domestic, not overseas, manufacture of components for assembly abroad. Under the court of appeals' decision, however, once software is designed in the United States, any transmission abroad for copying and sale abroad is subject to Section 271(f). See Pet. App. 5a-7a. By imposing liability for a single transmission to a foreign country, the court of appeals denied companies that create software in the United States any realistic avenue of competing in overseas markets without risking liability under Section 271(f). In contrast, companies in other industries that design components in the United States can replicate those components abroad without fear of Section 271(f) liability. See pp. 16-17, *supra*.

As respondent concedes (Resp. Supp. Br. 4), "there is absolutely no indication that Congress meant to treat software—of which it was clearly aware when it enacted Section 271(f)—any differently from any other components of patented inventions." Yet the court of appeals' interpretation does precisely that, and thereby frustrates the goal of a technology-neutral statutory scheme. Under the court of appeals' approach, the software industry alone is regulated in a manner that differs significantly from the fundamental balance struck by Congress, which prohibits the manufacture of components in the United States *while permitting it abroad*.[2]

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[2] That does not mean that software companies are exempt from Section 271(f), as respondent suggests (Resp. Supp. Br. 4). If petitioner sent copies of its Windows software from the United States to a foreign country and those copies were loaded onto computers, petition-

Respondent only confirms that point by suggesting (Resp. Supp. Br. 5) that software companies in the United States "can still perform much of the fundamental research that goes into software development and * * * convey their ideas to foreign manufacturers for the creation of software." The suggestion that United States-based software companies should escape liability by selling incomplete work product to foreign firms simply underscores the extent to which the court of appeals upset the balance struck by Congress. Under the court of appeals' holding, software companies based in this country must either relocate at least some of their operations to foreign countries or incur the competitive disadvantage of facing liability under Section 271(f) for overseas copying directed at overseas markets while their overseas competitors do not face liability under United States law in those markets.

While respondent contends (Resp. Supp. Br. 7) that Section 271(f) inherently presents a risk that "manufacturers of 'components' [will] move their operations offshore," the court of appeals' decision not only encourages overseas *manufacturing*, but also overseas *design*, because software developed in this country could not be transmitted abroad for replication. Respondent's contradictory assertion (*id.* at 8) that its position would "level[] the playing field among jurisdictions" by ensuring that the burdens imposed by Section 271(f) "will be the same wherever the manufacture occurs" further underscores that respondent is pursuing a different policy than the one underlying Section 271(f), which prohibits

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er would likely be liable under Section 271(f) for each such infringing copy. But petitioner did not do so here, and accordingly there is no basis for liability in this case. See *Deepsouth*, 406 U.S. at 525 n.7.

only the supply of components from the United States, not from abroad.[3]

D. The Presumption Against Extraterritoriality Confirms The Statute's Plain Meaning

If there were any doubt about the proper interpretation of Section 271(f), the presumption against extraterritoriality would resolve it. The court of appeals' decision runs afoul of that presumption by applying United States law to the foreign conduct of reproducing the Windows object code overseas for combination overseas with foreign-made computers sold in foreign countries.

1. As this Court observed in *Deepsouth*, "[o]ur patent system makes no claim to extraterritorial effect," and our laws "correspondingly reject the claims of others to such control over our markets." 406 U.S. at 531; accord *Dowagiac Mfg. Co.* v. *Minnesota Moline Plow Co.*, 235 U.S. 641, 650 (1915). Thus, "the use of [a patentee's invention] outside of the jurisdiction of the United States is not an infringement of his rights, and he has no claim to any compensation for the profit or advantage the party may derive from it." *Brown* v. *Duchesne*, 60 U.S. (19 How.) 183, 195-196 (1857).

That venerable principle follows from the text of the Patent Act, which provides that a patent confers exclusive rights "throughout the United States." 35 U.S.C.

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[3] Respondent errs in arguing that "Section 271(f) was enacted 'to avoid encouraging manufacturing outside the United States.'" Resp. Supp. Br. 8 (quoting 130 Cong. Rec. at 28,069). While a different provision of the same bill had that effect by prohibiting the *importation* of goods produced by a patented process, see 130 Cong. Rec. at 28,069, Section 271(f) inherently encourages a degree of overseas manufacturing by prohibiting domestic manufacturing of components for assembly abroad. Respondent's position would extend that incentive to design as well as manufacture in the software context.

154(a)(1). It also reflects considerations of international comity, as courts must "assume that legislators take account of the legitimate sovereign interests of other nations when they write American laws." *F. Hoffmann-La Roche Ltd.* v. *Empagran S.A.*, 542 U.S. 155, 164 (2004); see *EEOC* v. *Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991). Foreign conduct is traditionally the domain of foreign law, which may embody different policy judgments about the relative rights of inventors, competitors, and the public in patented inventions.

2. Under the presumption against extraterritoriality, Congress must provide a "clear * * * indication of intent to extend the patent privilege" abroad before the patent laws will be construed to govern extraterritorially. *Deepsouth*, 406 U.S. at 532; see *F. Hoffmann-La Roche*, 542 U.S. at 164, 174; *Arabian Am. Oil Co.*, 499 U.S. at 248. Although Section 271(f) manifests a clear intent to prevent American companies from manufacturing the components of patented inventions in the United States for assembly abroad, it does not manifest an intent, much less a clear one, to regulate the reproduction of those components outside the United States. See *Pellegrini*, 375 F.3d at 1118-1119.

Respondent errs in arguing (Resp. Supp. Br. 5-6) that the presumption against extraterritoriality is inapplicable because Congress was not "silent on the question of foreign applicability," but instead enacted Section 271(f) for the very purpose of addressing "the interplay between U.S. and foreign law." As this Court has explained, "[t]he applicability of the presumption [against extraterritoriality] is not defeated * * * just because [a statute] specifically addresses the issue of extraterritorial application." *Smith* v. *United States*, 507 U.S. 197, 204 (1993). Instead, the presumption remains rele-

vant to determining the *extent* of a statute's reach. See, *e.g.*, *ibid.*; *F. Hoffman-La Roche*, 542 U.S. at 161-162, 164 (applying presumption to antitrust statute with express provisions governing its extraterritorial application to some foreign conduct). In any event, Section 271(f)'s restriction on the supply of components "from the United States" expresses a domestic, not extraterritorial, focus, further confirming the presumption's relevance here. 35 U.S.C. 271(f)(1).

3. Although respondent argues (Br. in Opp. 20-22; Supp. Br. 5) that Section 271(f) governs only the domestic conduct of supplying components of patented inventions, the court of appeals' holding is wrong precisely because it is not so limited. When the statute is read correctly to regulate only the supply of components from the United States for assembly abroad, it has no direct extraterritorial application. But the critical aspect of the court of appeals' decision is that it converts a single act of supply from the United States into a springboard for liability each time a copy of the software is subsequently made overseas and combined with computer hardware overseas for sale overseas. As Judge Rader noted, petitioner is subjected to open-ended liability in the United States "for products manufactured entirely abroad." Pet. App. 11a. Imposing liability for conduct that occurs in foreign countries and is directed toward foreign markets fully implicates the comity concerns underlying the presumption against extraterritoriality. Cf. *Brown*, 60 U.S. (19 How.) at 194-195, 198 (applying the presumption against extraterritoriality to hold that a foreign ship was not liable for its use of a patented invention when "coming into or going out of a port of the United States," even though the patented invention was briefly used in the United States).

4. Respondent's contention (Br. in Opp. 25) that petitioner should not be able to "misappropriat[e] another's patented technology," simply misses the point that foreign law, not United States law, governs the manufacture and sale of components of patented inventions in foreign countries. If respondent desires to prevent copying in foreign countries, its remedy lies in obtaining and enforcing foreign patents, not in attempting to apply United States law to acts occurring abroad. See Pet. App. 12a, 18a-19a (Rader, J., dissenting).

Respondent complains (Resp. Supp. Br. 6) that some foreign jurisdictions are less protective of patent rights than is the United States. But, of course, whatever the margin of reduced protection abroad is equally the margin of competitive disadvantage for United States companies if they, unlike their foreign competitors, are subject to United States patent law for overseas manufacturing. Moreover, the presumption against extraterritoriality exists in large part to protect each jurisdiction's right to make its own policy decisions, and thereby "protect against unintended clashes between our laws and those of other nations which could result in international discord." *Arabian Am. Oil Co.*, 499 U.S. at 248; see *F. Hoffman-La Roche*, 542 U.S. at 164. Comity is more, not less, important when foreign law differs from United States law.

CONCLUSION

The judgment of the court of appeals should be reversed.

Respectfully submitted.

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORPORATION,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF AMAZON.COM, INC., MENTOR GRAPHICS CORPORATION, AND WACOM TECHNOLOGY CORPORATION AS *AMICI CURIAE* IN SUPPORT OF PETITIONER

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QUESTIONS PRESENTED

The questions presented are:

(1) Whether digital software code—an intangible sequence of "1's" and "0's"—may be considered a "component[] of a patented invention" within the meaning of Section 271(f)(1); and, if so,

(2) Whether copies of such a "component[]" made in a foreign country are "supplie[d] . . . from the United States."

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INTEREST OF *AMICI CURIAE*[1]

Amicus curiae Amazon.com, Inc., is an e-commerce technology leader whose engineers develop innovative designs for the operation of Web stores, and specify those designs using digital software codes. From the United States, Amazon.com transmits some of its engineers' designs, in the form of digital software codes, for use by foreign Web store computers.

Amicus curiae Wacom Technology Corporation is a leading provider of pen-enabled computer tablets and digitizer software. Digital software codes developed by Wacom engineers in the United States are distributed worldwide, via the Internet and via compact discs.

Amicus curiae Mentor Graphics Corporation is a leading provider of Electronic Design Automation (EDA) software used to design and verify electronic design information. Mentor creates software in the U.S. and distributes copies of its software worldwide on compact discs and over the Internet.

Transmitting digital software codes from the United States does not supply a single molecule of any foreign computer from the United States. Stated differently, a computer assembled from entirely foreign parts does not contain a component supplied from the U.S. even when that foreign computer runs software code written in the U.S.

The Federal Circuit has ruled, however, that such engineering design information—expressed in machine-

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[1] Letters of consent to the filing of *amicus* briefs in support of either party were filed with the Court on November 30, 2006, pursuant to Rule 37.3. Pursuant to Rule 37.6, counsel for *Amici* states that no counsel for a party authored this brief in whole or in part. Further, no person or entity, other than Amici or their counsel of record made a monetary contribution to the preparation or submission of this brief.

executable digital codes—henceforth will be considered a "component" of a patented machine under 35 U.S.C. § 271(f), imposing patent infringement liability risk on those who transmit the digital codes from the U.S. This, *Amici* respectfully submit, is a scientifically unsound and disruptive judicial expansion of U.S. Patent Law. Engineering design information—having no mass or molecules—is fundamentally different from a physical machine part. U.S. engineers develop digital software codes to communicate information. The information is stored by the engineer on disc and transmitted to the manufacturer either electronically or by transporting the disc. When the manufacturer transmits the information to the final machine (without installing the transport disc in the machine), not a single molecule of the engineer's original storage disc is transferred with it. The U.S.-created information is there, but the machine itself is comprised of entirely foreign-made components. *Amici's* interest in this case is to see overturned this scientifically unsound judicial expansion of U.S. patent law that disrupts wide swaths of the U.S. information economy.

SUMMARY OF THE ARGUMENT

Patent Law rests at the intersection of law and science. It is of the utmost importance to those regulated by Patent Law that the courts applying the law abide by scientific truths. Here, it is vital that the Court carefully distinguish between information and matter in applying Section 271(f).

The Court should answer Question No. 1 in the negative, and reverse the Federal Circuit's expansion of Section 271(f), for the following reasons.

A. The Common Sense "Molecule Test" Supplies The Answer: If every part of a machine assembled in China came from China, then no component of the machine was supplied from the United States. This remains so even if the unique pattern of threads on a Chinese screw in the machine was designed by a U.S. engineer. No matter where their unique arrangement was invented or dictated, if each molecule in the machine was supplied from outside the U.S., then no component was supplied from the U.S. In the present case, Microsoft did not supply even a single molecule of the foreign machines at issue. Section 271(f) regulates only those who supply a component of the patented machine from the U.S. Thus, common sense says that it does not cover Microsoft's actions in this case.

B. The Statutory Language of Section 271(f), "Component of a Patented Invention," Requires The Same Answer: The meaning of "supplies ... from the United States ... components of a patented invention" in Section 271(f) depends, of course, on the meaning of "patented invention" and "component." "Patented invention" is defined in 35 U.S.C. § 101, and requires a physical thing or physical method. A patent does not protect even the most useful information; rather, it protects physical embodiments of ideas and designs. The word "component" means "constituent part." The constituent parts of a physical object are themselves physical matter. (All the information in the world cannot constitute a single molecule.) A "component of a patented invention," being a constituent part of a physical thing, is, therefore, itself a physical thing. Thus, Section 271(f) regulates the supply of physical components from the U.S., and does not cover Microsoft's actions in this case.

C. A Special Rule For Software Would Be Scientifically Unsound: Computer-Aided-Design and Computer-Aided-Manufacturing ("CAD/CAM") digital code

designs are used by computer-controlled machines to manufacture machine parts outside the U.S. all the time. No one has suggested that Congress intended Section 271(f) to regulate the export of such CAD/CAM codes. But, software is simply another form of digital code design. It makes no sense to allow the export of digital CAD/CAM codes (dictating an infringing machine design) but prohibit the export of digital software codes (dictating an infringing computer design).

Software codes dictate the precise patterns on computer discs, e.g., the pattern of pits and lands on an optical CD. Those patterns perform useful functions, and can be used to replicate another disc with the same patterns. The same is true of CAD/CAM codes. They dictate the precise patterns on a machine part, which patterns perform useful functions and can be used to replicate the patterns in another product. (See Figure 1, depicting pits and lands on a disc and a computer-controlled tool forming patterns on a machine part).

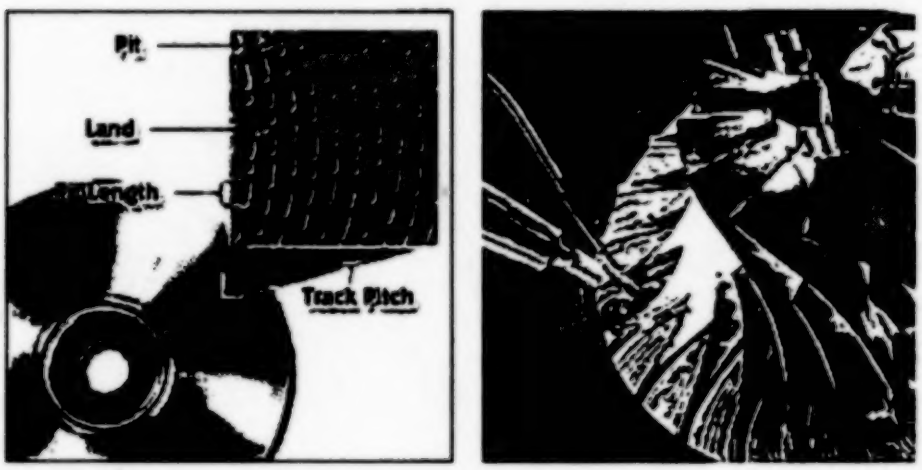

Figure 1

There is no reason to treat software codes and CAD/CAM codes differently under Section 271(f).

D. The Lower Courts Erred By Conflating Physical Things With Their Design Information: The fundamental difference between a physical thing and the design of that thing is sometimes overlooked. The design of a 747 Jumbo Jet weighs nothing. It is information, not matter. All of the CAD/CAM and software codes ever invented, taken together, weigh nothing. The lower courts in this case erred by conflating things (e.g., computer discs) with the engineering design information for those things (e.g., digital software codes). They ruled as if a miniaturized physical set of zeroes and ones were manufactured in the U.S. and then exported and assembled into foreign computers. That, of course, is not how it works. The zeros and ones are logical constructs used to describe a desired physical design. They are not themselves physical. Viewing a hard disk or a screw under a microscope will find no zeros or ones, even though zeros and ones appeared throughout the computer codes used to manufacture that hard disk and that screw.

ARGUMENT

I. COMMON SENSE SHOWS THAT A FOREIGN MACHINE PART IS STILL FOREIGN EVEN IF ITS COMPUTER-READABLE DESIGN IS FROM THE U.S.

As noted, if a machine is assembled abroad entirely from parts made abroad, then no one would say that a component of the machine was made in the U.S., even if one of the parts was designed in the U.S. This is as true for computers as for other machines. An optical disc made in China from molecules supplied from China, is a Chinese optical disc, even if its pits and lands are arranged in a

computer-readable pattern that encodes (stores) a software program, CAD/CAM codes, song, or other information supplied from the United States.

This "common sense" answer is illustrated with the following two-part hypothetical assembly of a French key and lock.

Part I: A French key has a unique pattern designed to fit a matching pattern in a French lock's mechanism. Both the key and lock are made in France, entirely from materials made in France. Not a single molecule of the key or lock is traceable to the U.S. (See Figure 2).

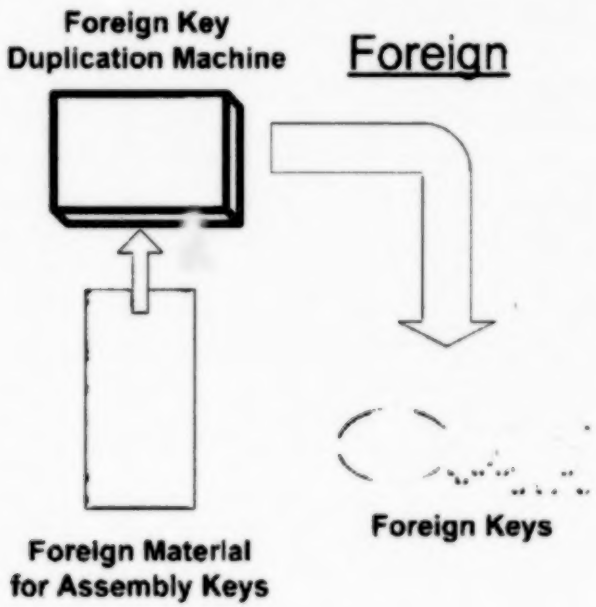

Figure 2

No one would argue that this "key" component of the key-lock assembly was supplied from the U.S., or that Section 271(f) applies.

Part II: Now consider a new fact: the unique pattern of the French key was supplied from the U.S. This pattern (an example of engineering design information) was conveyed from the U.S. in one of a variety of manners. For example: (1) a U.S.-made master key is exported to France where its unique pattern is decoded and duplicated automatically by an electronic key duplication machine to make the French key (see Figure 3), or (2) CAD/CAM computer codes are e-mailed from the U.S. to France where they are used to program a machine to manufacture the key to the unique design specified by the U.S. engineer. No matter how the U.S. pattern is supplied, all of the molecules (matter) of the replicated French key are still supplied entirely from France. Only the design information was supplied from the U.S. and since information is not a physical object, Section 271(f) plainly does not apply.

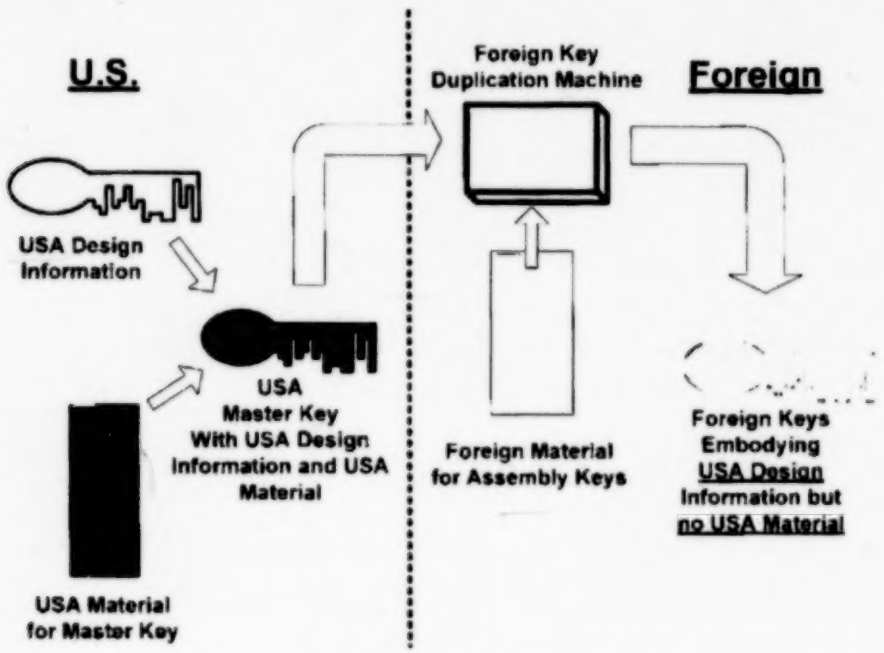

Figure 3

As this hypothetical illustrates, the above-proposed "Molecule Test" provides a bright line test for anyone concerned about possible liability under Section 271(f): if the foreign assembly does not include a single molecule exported from the U.S. by the potential defendant, then Section 271(f) does not apply. There rarely, if ever, will be uncertainty on this point.

II. BECAUSE A "PATENTED INVENTION" MUST BE PHYSICAL, SO MUST A "COMPONENT" (CONSTITUENT PART) OF A "PATENTED INVENTION"

The issue before the Court is one of statutory construction. The statutory language provides, in pertinent part: "Whoever ... supplies ... from the United States ... any component of a patented invention ... intending that such component will be combined outside of the United States ... shall be liable as an infringer." 35 U.S.C. § 271(f)(2).

"Component": A "component" is "1. A constituent part" (Webster's Third New International Dictionary at 466 (1993)). "Constituent" means "3a. a thing, person, or organism that along with others serves in making up a complete whole or unit: an essential part...." (Id. at 486).

Thus, a component is not just any "part" of something else, it is a "constituent" part. Information cannot be a component of matter because all the information in the world cannot constitute even a single molecule of matter. Matter occupies space, has mass, and is made up of atoms and molecules and parts thereof. Matter is "2a. The substance of which a physical object is composed...." (Webster's Third New International Dictionary at 1394 (1993)). Information, on the other hand, does not occupy space or have mass. Information is "1d: the communication or reception of

knowledge or intelligence, 2: something received or obtained through informing: as a: knowledge communicated by others or obtained from investigation, study, or instruction...." (Id. at 1160.)

"Patented Invention": Although an intangible (non-physical) idea can be an "invention," it cannot be a "patented invention." Rather, physical embodiments of an idea (e.g., a computer readable media storing software code), or physical processes, may be patentable. See 35 U.S.C. § 101 ("Inventions patentable: Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, ..., may obtain a patent therefor ...."); Gottschalk v. Benson, 409 U.S. 63, 93 S. Ct. 253, 34 L. Ed. 2d 273 (1972) (an algorithm is not patentable); Rubber-Tip Pencil Co. v. Howard, 87 U.S. 498, 507 (1874) ("An idea of itself is not patentable...."). The Patent Office has described this requirement that a patented invention be physical in the context of computer software:

> Similarly, computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of

> the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

U.S. Patent & Trademark Office, Manual of Patent Examining Procedure (M.P.E.P.) § 2106.01, Part I at 2100-18 (8th ed., Revision 5 (August, 2006)) (emphases added).

"Component of a Patented Invention": Since information cannot constitute a physical object, and a "patented invention" requires a physical embodiment, software codes (e.g., a binary sequence of numbers) cannot be a component of a patented invention.

III. THERE IS NO SCIENTIFIC BASIS FOR CREATING ONE RULE FOR SOFTWARE CODES, BUT A DIFFERENT RULE FOR CAD/CAM CODES

All useful products have a useful design and thus embody (store) some useful design information. This means that the issue before the Court is of universal concern to our nation's information economy. If design information henceforth will be deemed a "component of a patented invention," then all product designs of all engineers, not "just" software engineers, are implicated.

Computer-aided manufacturing (CAM) programs use 3D models of machine parts generated using computer-aided design (CAD) programs, to create computer numerically controlled (CNC) codes that instruct numerical controlled machine tools how to manufacture the parts. CNC codes have

been used to manufacture untold billions of parts around the world since the 1950s. *See generally* http://en.wikipedia.org/wiki/CNC and http://en.wikipedia.org/wiki/Computer-ided_manufacturing (each visited December 12, 2006).

When Congress enacted Section 271(f) in 1984, surely it did not intend to impose liability on engineers exporting their machine-executable-code engineering designs for cams, screws, gears and other machine parts. Yet, the interplay between a physical thing made up of molecules, on the one hand, and the design of that thing (which design may be formulated and transmitted using computer-readable computer codes) is the same for computer discs as it is for:

- keys,
- tire treads,
- airplane wings;
- turbine blades;
- gears;
- screws;
- integrated circuits;
- etc.

Sometimes a product's engineering design information is communicated by shipping a physical master of the product, rather than electronically transmitting CAD/CAM codes. A computer-controlled machine measures the exact patterns of the master gear, master key, or other master part and creates a digital file representing those patterns. That file is then used, as above, to manufacture many copies of the master part. Thus, the master part itself carries machine-readable and machine-executable engineering information (which can be expressed in digital codes)—just like a computer disc. Indeed, as recognized by

the Panel's dissenting Opinion, this was the analytical point of the above "master key" hypothetical (see Figures 3 and 4). As the dissenting Opinion notes, analytically this "master key" hypothetical and the "master disk" facts before the Court are "indistinguishable." AT&T Corp. v. Microsoft Corp., 414 F.3d 1366, 1375-76 (Fed. Cir. 2005).

Whether transmitted electronically or via a "master," the fundamental difference between the non-physical creations of engineers (design information which can be expressed in digital codes) and the physical creations of manufacturers (things made up of molecules) applies in all industries equally. There is no scientific basis for creating a special rule for software digital codes under Section 271(f).

IV. THE LOWER COURTS CONFLATED PHYSICAL THINGS WITH THE INTANGIBLE DESIGN INFORMATION FOR THOSE THINGS

The district court in this case failed to distinguish between information and matter. The district court failed to make this distinction on two separate issues: (1) what can be patented, and (2) what did Microsoft contribute to the patented assemblies.

First, on the question of what can be patented, the district court stated that software can be patented, without analyzing whether software information (expressed, e.g., in digital codes) can be patented. (As quoted *supra* at pp. 9-10, the Patent Office recognizes that software information cannot be patented.) For example, the district court stated: "It is well-established, however, that software can be a component of a patented invention or infringing device" AT&T Corp. v. Microsoft Corp., Civ. No. 01-4872 (WHP), 2004 WL 406640, at *4 (S.D.N.Y., Mar. 5, 2004), citing In re Alappat,

33 F.3d 1526, 1545 (Fed. Cir. 1994). But In re Alappat held the exact opposite. It held that a computer – not software – may be patentable subject matter because it is a machine, and referred to the parts of the machine as being "structures." Id. at 1541.

Second, on the question of what Microsoft contributed to the foreign computer assemblies, the district court used the terms "code" and "software" to refer at times to information and at other times to matter. For example, the district court noted "the undisputed fact that the object code is originally manufactured in the United States" AT&T, 2004 WL 406640, at *7. Its use of the term "manufactured" suggests that the district court had in mind physical discs, as products, not information, are "manufactured." But its reference to the "object code" elsewhere may be directed to software information (e.g., a sequence of binary numbers), see AT&T, 2004 WL 406640, at *4 ("software or object code contained on the golden master disks").

The Federal Circuit made the same mistake. It failed to carefully distinguish between things and the design of those things. Thus, it mistakenly analogized software information to liquids and gases. AT&T Corp., 414 F.3d at 1370-71. Software information is not akin to liquids and gases because it has no mass and no molecules. Its information content is transferred from disc to disc without a single molecule being transferred—just as the information in this Brief is transferred to a photocopy without a single molecule being transferred.

Similarly, the Federal Circuit referred to the "replicable nature of software," id., at 1370, as if it is fundamentally different from other digital code designs. Yet, all digital engineering design codes—whether for a screw, a 747, or a computer hard disk—are equally replicable.

Again, it is vital that Patent Law be applied in a scientifically sound manner and that here the Court carefully distinguish between information and matter, in applying Section 271(f).

CONCLUSION

For the foregoing reasons, the Court should answer Question No. 1 in the negative, and reverse the Federal Circuit's expansion of Section 271(f).

December 14, 2006

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No. 05-1056

IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORP.,
Respondent.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

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AMICUS CURIAE BRIEF OF THE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

This brief is submitted by the American Intellectual Property Law Association ("AIPLA") as amicus curiae in support of neither party to urge the Court to decide that (1) software can be a "component" of a patented invention within the meaning of 35 U.S.C. § 271(f) and (2) the reproduction of software in a foreign country is not "supplying" that software from the United States under 35 U.S.C. § 271(f).

STATEMENT OF INTEREST[1]

The AIPLA has no interest in either party to this litigation and has no stake in the outcome of this case, other than its interest in seeking a correct and consistent interpretation of the patent laws.

AIPLA is a voluntary bar association of over 17,000 members who daily work with patents, trademarks, copyrights, trade secrets, and the legal issues that intellectual property presents. AIPLA's members include attorneys in private and corporate practice and in government service. Through their diverse representation, AIPLA brings a broad perspective and extensive experience to the important issues raised in this case. Because of the diverse interests of AIPLA members and their clients, this Court's decision with

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[1] Consents to file this brief from the counsel of record for all parties are on file with the Clerk of the Court pursuant to Supreme Court Rule 37.3(a). This brief was not authored, in whole or in part, by counsel to a party, and no monetary contribution to the preparation or submission of this brief was made by any person or entity other than AIPLA or its counsel.

regard to the interpretation of section 271(f) may materially impact some of AIPLA's members or their clients.

BACKGROUND

AT&T asserts that computers loaded with Microsoft software infringe – under 35 U.S.C. § 271(f) – claims of United States Reissue Patent No. 32,580 ("the '580 patent"). Section 271(f)(1) states:

> Whoever without authority ***supplies or causes to be supplied*** in or from the United States all or a substantial portion of the ***components of a patented invention***, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f)(1) (emphasis added). The '580 patent includes claims to an apparatus capable of encoding, compressing, and replaying recorded speech. Such claims cover an apparatus or medium loaded with software that performs certain processes.

AT&T alleges that Microsoft is liable under section 271(f) because it exports, via a master disk or an electronic transmission, a single copy of software from the United States intending to replicate it and install the copies on computers abroad. AT&T argues that this exported software is a "component[] of a patented invention" that is "supplied in or from the United States . . . in such manner as to actively induce the combination" of the software with another

component (i.e. a computer) such that the combination would infringe the claims of the '580 patent if it were made in the United States. *See* 35 U.S.C. § 271(f). Microsoft concedes that it infringes the '580 patent when it creates the combination in the United States. However, Microsoft argues that it is not liable under section 271(f) because (1) its exported software code is not a "component[] of a patented invention" and (2) the software copies made abroad are not "supplied in or from the United States."

This Court's interpretation of 35 U.S.C. § 271(f) will resolve this dispute.

SUMMARY OF ARGUMENT

This Court has granted certiorari as to two questions: (1) whether digital software code may be considered a "component[] of a patented invention" within the meaning of section 271(f)(1); and, if so, (2) whether copies of such a component (i.e. software code) made in a foreign country are "supplie[d] ... from the United States" within the meaning of section 271(f)(1).

This Court should affirm the Federal Circuit's interpretation of section 271(f), in accordance with the plain meaning of its text, that software can be a "component[] of a patented invention." The plain language of the statute applies to any part of any patented invention. Although the legislative history shows Congress' intent to impose liability for the supply of parts of a patented machine for foreign assembly, the clear language used in the statute shows a congressional intent to enact a statute with a much broader effect that applies to any patented technology.

However, this Court should reverse the Federal Circuit's expansive interpretation of the phrase "supplies or causes to be supplied in or from the United States" as improperly disregarding the plain language of the statute. This Court should hold that copies of software, made in a foreign country, are not "supplie[d] ... from the United States."

The ordinary meaning of "supply" does not encompass copying. The legislative history supports the ordinary meaning because it focuses on prohibiting foreign ***assembly*** of components and does not indicate that Congress intended section 271(f) to cover acts such as manufacturing or copying that occur on foreign soil. The Federal Circuit erred by ignoring the ordinary meaning of the statute. Instead, the Federal Circuit extended the scope of the statute beyond its text to reflect its view of the way software is generally supplied. In so doing, the Federal Circuit improperly stepped into the role of legislator and rewrote the statutory text to account for the ease of copying software and its desire to effectuate its view of the congressional purpose of the statute.

ARGUMENT

I. SOFTWARE CAN BE A "COMPONENT[] OF A PATENTED INVENTION" WITHIN THE MEANING OF SECTION 271(F)

The Federal Circuit correctly held that software can be a "component[] of a patented invention" and properly rejected Microsoft's arguments that software should be categorically excluded from the scope of section 271(f)(1). Under the only interpretation consistent with the text of the statute, software can be a "component[] of a patented invention."

A. The text of the statute mandates an interpretation of "component[] of a patented invention" that includes software

Courts give words of a statute "their ordinary, contemporary, common meaning, absent an indication that Congress intended them to bear some different import." *Williams v. Taylor*, 529 U.S. 420, 431 (2000) (quotations and citations omitted). Because the statutory language is plain here, "the sole function of the courts – at least where the disposition is not absurd – is to enforce it according to its terms." *Arlington Cent. Sch. Dist. Bd. of Educ. v. Murphy*, __ U.S. ___, 126 S. Ct. 2455, 2459 (2006) (quoting *Hartford Underwriters Ins. Co. v. Union Planters Bank, N. A.*, 530 U.S. 1, 6 (2000)).

To resolve the parties' dispute, this Court needs to interpret the statutory terms "components" and "patented invention." Because the statute does not define these unambiguous terms, each should be given its ordinary meaning in an analysis that begins and ends with the text of section 271(f).

Section 271(f)(1) uses the word "components" three times: "components of a patented invention"; "where such components are uncombined in whole or in part"; and

"actively induce the combination of such components."[2] The statute's usage of "components" suggests a broad meaning because the term does not appear with limiting or modifying words. In addition, the context shows that a "component" is something combinable with other things to form a patented invention, which broadly applies to any technology.

This Court also uses dictionaries to determine the ordinary meaning of words in a statute. *E.g.*, *Williams v. Taylor*, 529 U.S. 420, 431 (2000); *Walters v. Metro. Educ. Enters.*, 519 U.S. 202, 207-08 (1997). Dictionaries define "component" as "part of a mechanical or electrical complex" *American Heritage Dictionary* 302 (2d coll. ed. 1991), "discrete part of a larger system or structure" or "individual modular software routine that has been compiled and dynamically linked, and is ready to use with other components or programs" *Microsoft Computer Dictionary* 116 (5th ed. 2002), and "a constituent part; element; ingredient" *The Random House Dictionary of the English Language* 419 (2d ed. 1987). The dictionary meanings therefore indicate that a component is a part or constituent of some larger item.

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[2] Section 271(f)(2) uses the term "component" three times in a context nearly identical to that in Section 271(f)(1):

> Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

Moreover, the statute's use of the term "component" in sections 271(c) and 271(g) is consistent with that meaning. Section 271(c) states that one may contributorily infringe a patent by selling a "component" that "constitute[es] a material *part* of the invention." 35 U.S.C. § 271(c) (emphasis added). Section 271(g)(2) states that one will not be liable for, *inter alia*, importing certain products if the product "becomes a trivial and nonessential *component* of another product." 35 U.S.C. § 271(g)(2) (emphasis added). Both of these provisions use "component" in a manner consistent with its dictionary definition.

In short, the text of section 271(f), the text of other parts of section 271, and dictionaries all indicate that a "component" is a part of some larger item. The statutory text does not suggest the term "components" has a technological limitation.

Nor is there any technological limitation implied in the phrase "patented invention," which the statute identifies as the intended result of combining the supplied components. Under 35 U.S.C. § 101, the term "invention" includes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."[3] It cannot reasonably be disputed that the result of

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[3] The definitional section, 35 U.S.C. § 100, defines "invention" as "invention or discovery."

the foreign combination in this case is a patented invention, given Microsoft's concession of domestic infringement.[4]

Under such an interpretation, software can be a "component[] of a patented invention." Courts have long held that software can be part of a patented invention. *E.g.*, *Diamond v. Diehr*, 450 U.S. 175, 187 (1981). For example, in *In re Alappat*, the Federal Circuit stated: "[A] computer operating pursuant to software may represent patentable subject matter, provided, of course, that the claimed subject matter meets all of the other requirements of Title 35." 33 F.3d 1526, 1545 (Fed. Cir. 1994). There is no dispute that one can load software onto a computer, thereby giving that computer a new ability to perform new and useful processes. Quite clearly, then, the software is a "component" or a "part" of the patented invention.[5]

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[4] The general infringement statute prohibits the unauthorized making, using, selling, offering to sell, or importing of "any patented invention" during the term of the patent. 35 U.S.C. § 271(a). In addition, the use of "patented invention" in this general infringement section suggests that the term has a broad meaning. This is especially so when one looks at the subsections that use more specific terms like "patented machine, manufacture, combination or composition", 35 U.S.C. § 271(c); "patented product", 35 U.S.C. § 271(d)(5); or "process patented", 35 U.S.C. § 271(g).

[5] The components at issue need not be patentable individually; they just must be a part of something that is patentable. For example, in *Deepsouth*, neither component was itself patentable – only the combination was. *See Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 521 (1972).

B. Neither the legislative history, nor any reasonable patent policy compels an interpretation of section 271(f) that excludes software

Where the statutory text is unambiguous, this Court need not consider the legislative history or other extrinsic evidence.[6] But even if this Court finds it necessary to look beyond the statutory text, it will find no congressional intent to limit the application of section 271(f) to mechanical inventions.

In *Deepsouth Packing Co. v. Laitram Corp.*, this Court held that United States patent law did not prohibit a company from exporting unpatented parts, even where the company instructed the buyer to assemble the parts into a machine that, if so assembled in the United States, would infringe a United States patent. 406 U.S. 518, 526-32 (1972). Congress enacted section 271(f) in response to this Court's holding in *Deepsouth*. For example, the legislative history states that section 271(f):

> prevents copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to the United States Supreme

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[6] As this Court has "repeatedly held, the authoritative statement is the statutory text, not the legislative history or any other extrinsic material. Extrinsic materials have a role in statutory interpretation only to the extent they shed a reliable light on the enacting Legislature's understanding of otherwise *ambiguous* terms." *Exxon Mobil Corp. v. Allapattah Servs.*, 545 U.S. 546, 125 S. Ct. 2611, 2626 (2005) (emphasis added).

> Court decision in [Deepsouth], concerning the need for a legislative solution to close a loophole in patent law.

Patent Law Amendments Act of 1984, 1984 U.S.C.C.A.N. 5827, 5828. The legislative history also indicates that the President of the United States had a similar view of the statute, stating that section 271(f) closed a loophole and imposed liability even where "final assembly of patent [sic] machines . . . occur[ed] offshore." President's Message to Congress, Signing of Patent Law Amendments Act of 1984, 20 Weekly Comp. Pres. Doc. 45 (Nov. 9, 1984).

The legislative history thus indicates a Congressional intent to close the "loophole" exposed by the *Deepsouth* decision. Congressional intent to close that "loophole" is consistent with an interpretation of section 271(f) that prevents any offshore combination of components in a manner that would infringe a United States patent if done in this country. Nothing in the legislative history indicates that the statute is to be construed narrowly and limited to the facts of that decision.

More importantly, the statutory text completely contradicts such an interpretation. The drafters of section 271(f) employed the broad language "component[] of a patented invention" instead of narrower language, such as "patented product" or "patented machine." Thus, while Congress focused on reversing the result in *Deepsouth*, Congress passed a statute having a much broader effect. This Court has "stated time and again that courts must presume that a legislature says in a statute what it means and means in a statute what it says there." *Arlington*, 126 S. Ct.

at 2459 (quoting *Connecticut Nat'l Bank v. Germain*, 503 U.S. 249, 253-54 (1992)).[7]

A holding that software can be a component of a patented invention within the meaning of section 271(f) will not impose liability on those exporting mere information or instructions. As the Federal Circuit correctly held in *Pelligrini v. Analog Devices, Inc.*, instructions or information are not a component of a patented invention. 375 F.3d 1113, 1118 (Fed. Cir. 2004), *cert. denied*, 543 U.S. 1003 (2004). This decision makes perfect sense, as such instructions or oversight never become a "part" of the patented invention. Rather, such materials merely aid one in making a product. Therefore, even under a broad interpretation of section 271(f), exportation of design information and the like cannot give rise to direct liability.

II. SOFTWARE THAT IS COPIED IN A FOREIGN COUNTRY IS NOT "SUPPLIE[D] ... FROM THE UNITED STATES" WITHIN THE MEANING OF SECTION 271(F)

The Federal Circuit incorrectly held that Microsoft "supplies" innumerable copies of software from the United States by its exportation of a "master disk" of software or its electronic transmission of a copy of software to a foreign

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[7] An interpretation that does not specifically exclude software from the scope of the statute furthers sound patent policy. As one example, pursuant to United States and international law, patent laws apply equally to all technologies. *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005) (citing TRIPS Agreement, Part II, Section 5 (1994) ("Patents shall be available and patent rights enjoyable without discrimination as to . . . the field of technology.")). There is no principled reason for a specific exclusion of software from the ambit of section 271(f).

country. Properly interpreted, section 271(f) does not prohibit the foreign copying of software because such copying does not entail "supplying" in or from the United States.[8]

A. The ordinary meaning of "supplies" does not include copying

The statute does not define the pertinent language, so this Court should give the text its ordinary meaning. *Williams*, 529 U.S. at 431. The dictionary defines "supply" as "to furnish or provide." *Random House Unabridged Dictionary* 1912 (2d ed. 1993); *see also The American Heritage College Dictionary* 1364 (3d ed. 1993) (defining "supply" as "[t]o make available for use; provide" and "[t]o furnish or equip with"). The ordinary meaning of "supplies" or "supplied" is therefore the act of furnishing or providing an article.

Moreover, the statutory text identifies two discrete elements: (1) supply of components from the United States; and (2) active inducement to combine into the patented invention. Thus, section 271(f) imposes liability upon one who "***supplies or causes to be supplied in or from the United States*** all or a substantial portion of the ***components*** of a patented invention . . . in such manner as to actively induce the combination of ***such components*** outside of the United States." 35 U.S.C. § 271(f)(1) (emphasis added).

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[8] Although foreign-made copies of a supplied component trigger no liability, the export of the master disk itself, together with installation (combination) of that software on a single computer, could trigger liability. In such a case, foreign-made copies might be relevant to damages for such a violation. However, AIPLA takes no position on whether such damages would be appropriate here given the current state of the record.

This language suggests that liability will attach only where the supplier made or acquired components in the United States and then exported them with the intention that they be combined into a patented invention.

The Federal Circuit expressly recognized this fact in *Pelligrini*: "[section] 271(f) is clear on its face. It applies only where components of a patent[ed] invention are physically present in the United States and then either sold or exported." *Pelligrini*, 375 F.3d at 1117. Given its plain or "clear" meaning, the statutory text therefore does not prohibit foreign manufacture of components or foreign copying of a component.[9]

The legislative history supports this interpretation. As stated earlier, Congress enacted section 271(f) to correct the defect in United States patent law that permitted the exportation of parts of a patented machine for assembly into a patented machine abroad. *Deepsouth*, 406 U.S. at 527-29; *see also* Patent Law Amendments Act of 1984, 1984 U.S.C.C.A.N. at 5828. According to the Senate Report, Congress intended section 271(f) to prevent the situation where "components are ***supplied for assembly*** abroad to circumvent a patent." S. Rep. No. 663, 98th Cong., 2d Sess. 3 (1984) (emphasis added). The legislative history focused on prohibition of sending components to a foreign country with the intent that they be "assembled" there; nowhere does

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[9] As stated succinctly by the dissenting Judge in the decision below: "As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software. Thus copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying." *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1373 (Fed. Cir. 2005) (Rader, J. dissenting).

it suggest section 271(f) applies to foreign manufacture or copying of parts of a patented invention.

B. The presumption against extraterritorial application of United States law compels a narrow interpretation of section 271(f)

The legal presumption that United States laws do not apply to extraterritorial acts compels a narrow interpretation of "supplies or causes to be supplied." *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) ("[L]egislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States."); *see also F. Hoffmann-La Roche Ltd v. Empagran S.A.*, 542 U.S. 155, 164 (2004) ("[T]his Court ordinarily construes ambiguous statutes to avoid unreasonable interference with the sovereign authority of other nations." (citations omitted)). Congress' enactment of section 271(f) shows an intent to affect activity *directed at* foreign lands, but not an intent to affect acts *on* foreign lands. Congress focused the statute on the *domestic* act of "supplying" components to a foreign country for combination or assembly. 35 U.S.C. § 271(f).

Congress, thus, carefully avoided the imposition of liability for acts that take place on foreign soil (e.g., foreign manufacture or copying of components). *See Waymark Corp. v. Porta Sys. Corp.*, 245 F.3d 1364, 1367-68 (Fed. Cir. 2001) (holding section 271(f)(2) did not require actual assembly of the components because that "requirement would both raise the difficult obstacle of proving infringement in foreign countries and pose the appearance of giving extraterritorial effect to United States patent protection" (quotations omitted)). In extending the statute to cover copying of software on foreign soil, the Federal

Circuit's interpretation fails to avoid the extraterritorial application of United States laws.[10]

C. The Federal Circuit incorrectly extended section 271(f) beyond its text to accommodate special characteristics of software technology

The Federal Circuit's interpretation of "supplies or causes to be supplied in or from the United States" is mistaken. The court erroneously focused on software as a unique technology and gave underdeveloped policy concerns too central a role. In doing so, the court lost sight of the text of the statute.

The Federal Circuit inappropriately interpreted section 271(f) with specific reference to software. Starting with its analysis of the "ordinary meaning" of "supplying" the Federal Circuit focused on its view of the "way software is typically 'supplied.'" *AT&T*, 414 F.3d at 1369. According to the Federal Circuit, "'supplying' software commonly involves generating a copy . . . . Copying, therefore, is part

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[10] *See AT&T*, 414 F.3d at 1373 (Rader, J. dissenting) ("[The majority] extends § 271(f) to cover extraterritorial copying in [foreign countries]. This extraterritorial expansion of U.S. patent law contravenes the precedent of [the Federal Circuit] and the Supreme Court that expressly confines the rights conferred by Title 35 to the United States and its Territories." (citing cases)).

and parcel of software distribution."[11] *Id.* at 1370; *see also id.* ("[F]or software 'components,' the act of copying is subsumed within the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies."). Thus, from the outset of its inquiry the Federal Circuit assumed the "ordinary, contemporary, common meaning" of "supplied" must encompass the copying of software. *See id.* at 1369-70. The Federal Circuit ignored the ordinary meaning of the term by giving it a special meaning as applied to software. Such an approach is improper for a statute of general applicability. Under the Federal Circuit's approach, the "ordinary meaning" of "supply" differs for each technology – for some it encompasses foreign manufacture or copying, presumably for others it does not.

Indeed the Federal Circuit acknowledged the difference between supplying and copying software, and acknowledged that it extended the reach of the statute beyond its text. The Federal Circuit stated that the copies had "*essentially been* supplied from the United States," because "one can *supply* only a single disk that may be replicated . . . instead of *supplying* a separate disk for each copy of the software to be

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[11] Even if it is true that "supplying" of software "commonly involves generating a copy," it simply does not hold that "supplying" must encompass the conduct at issue. Of course one supplies additional units of software by making copies – the alternative is rewriting the program on a different medium every time one wishes to supply an additional unit of software. For example, one could say the supplying of 100 units of software "involves generating a copy" where a company makes 100 copies of the software and then supplies those 100 copies to the retailer. That conduct fits with the ordinary meaning of "supply" as argued *supra*. The issue here is whether one who provides only a single unit of software can be held to have supplied an infinite number of units of software, merely because the software can be replicated.

sold abroad." *AT&T*, 414 F.3d at 1370 (emphasis added). The Federal Circuit thus did not state that Microsoft *supplied* the copies made from its exported golden master disk.[12] Rather, the Federal Circuit determined that Microsoft's conduct was so similar to supplying that it must fall within the statute. The Federal Circuit reasoned that, because software is *easier* to copy than a part of a machine, section 271(f) must encompass that copying. However, the ease of copying of the particular "component[]" is not a principled basis for extending the statute and for imposing potentially enormous liability upon software companies.

The Federal Circuit believed its interpretation furthered its view of "Congress's motivation for enacting § 271(f)." *Id.* at 1371; *see also, e.g., id.* at 1370 n.2 (stating that adoption of a narrow construction of "supplies" "would emasculate § 271(f) for software inventions"). This approach was misguided. The "task here is not to determine what would further Congress's goal [in enacting the statute], but to determine what the words of the statute must fairly be understood to mean." *Holmes Group.*, 535 U.S. at 833 (interpreting 28 U.S.C. §§ 1295(a)(1) and 1338 in line with their text, where the congressional intent compelled a different result). The Federal Circuit's approach ignored the text in an effort to effectuate its view of Congress's goal in enacting the statute. In doing so, the Federal Circuit stepped outside of the proper role of a court.

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[12] The same holds for Microsoft's electronic transmissions to computers in foreign countries. The medium of exportation is not relevant to liability under section 271(f). In addition, the downloading of electronically transmitted software from a foreign computer to other foreign computers is tantamount to the copying of software stored on a disk.

Moreover, in its attempt to further the perceived purpose of section 271(f), the Federal Circuit ignored other policy considerations. Under the Federal Circuit's interpretation of section 271(f), once a company creates software in the United States, it could not send the software to a foreign country for replication without potentially incurring liability for infringement of a United States patent. This would create a strong incentive for software companies to relocate development facilities – and jobs – outside of the United States.

CONCLUSION

For the foregoing reasons this Court should hold that 1) software can be a "component[] of a patented invention" and 2) that copies of software made in a foreign country are not "supplied in or from the United States."

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MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORPORATION,

Respondent.

On Writ of Certiorari to the
United States Court of Appeals
for the Federal Circuit

BRIEF FOR *AMICUS CURIAE* AUTODESK, INC. IN SUPPORT OF PETITIONER

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INTEREST OF THE *AMICUS CURIAE* [1]

This case has been framed by the parties and the Federal Circuit as a case about "software," and the *amicus* certainly knows software very well. Autodesk is the developer of numerous two-dimension and three-dimension computer design and drafting software applications, with over 7 million registered users throughout the world. Autodesk's AutoCAD applications make up the preeminent platform for design and drafting. And its other products extend the design process in numerous directions that enable its customers to create structures they could never before create, and to communicate those structures in even further new and useful ways.

With all that said, the *amicus* does not believe this case should be viewed as a "software" case. That is because the term "software" poorly frames the legal issue on appeal, and because the *amicus* believes the Federal Circuit majority has created a software-specific rule where there is no basis in the statute or logic for such a special rule. The *amicus* does not take any position on the specific factual merits of the patent or defenses asserted in the present case.

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[1] Counsel for a party did not author this brief in whole or in part, and no party other than *Amicus* made a contribution toward the preparation and submission of this brief. All parties have consented in writing to the filing of this brief, and their letters of consent have been filed with the Clerk.

SUMMARY OF THE ARGUMENT

Autodesk writes to clarify two points that led the Federal Circuit's two-judge majority off track. First, the Federal Circuit, by focusing only on a so-called "component" issue in its *Eolas* decision, and then focusing on a so-called "supplied" issue in the present appeal, failed to read the entire statute together—which requires that the component that is supplied from the United States be ***the very same component*** that is combined in a foreign country. Second, by framing its analysis entirely around the general concept of "software," which describes several different things, the Federal Circuit missed a fundamental distinction between "software" as a non-physical idea, and "software" as a physical product—a distinction that makes all the difference in this case. In combination, these two errors caused the Federal Circuit majority to find liability even though the only possible "component" in this case is a golden master disk, and that disk is never combined outside the United States.

The *amicus* believes that the other issues on appeal have been well-raised by the parties, and therefore does not comment on them.

ARGUMENT

A. Section 271(f) Requires That the Component Supplied From the United States Be the Very Same Component Combined Overseas

The Federal Circuit has addressed Section 271(f) in two appeals that are key here—and each time it

addressed only part of the statute. In *Eolas Technologies, Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005), the Federal Circuit considered whether software could be a "component" of a patented invention, while in the present appeal, it considered whether software could be "supplied" from the United States. Each time, it answered the question in the affirmative.

But this parsed reading of the statute fails to address the fact that Section 271(f), when read in full, connects the component that is supplied to the exact same component that is combined overseas:

> Whoever without authority ***supplies or causes to be supplied*** in or from the United States all or a substantial portion of the ***components of a patented invention***, where such components are uncombined in whole or in part, in such manner as to actively induce ***the combination of such components*** outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f)(1).[2]

Applying the statute in its entirety to this case, the golden master disk is never one of "such components" that is combined outside of the United States even if it is considered a "component" that is "supplied" from the United States. Rather, the informa-

---

[2] Sub-section 2 of the statute is to the same effect. *See* 35 U.S.C. § 271(f)(2) ("...that ***such component*** will be combined outside of the United States..." (emphasis added)).

tion on the disk is copied onto a ***separate*** disk that then goes into the foreign-made computer.

Judge Rader recognized this problem in his dissent below. He expressed his belief that, when he was authoring the *Eolas* decision, he was only being asked to determine whether the golden master disk could be a "component" of a patented invention. When he was asked to address the rest of the statute, he understood that it could not be properly applied because Microsoft's supply of master disks was distinct from any supplying of copied disks that actually went into the computers. *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1373-75 (Fed. Cir. 2005) (Rader, J., dissenting).

The way in which the majority below appears to have gotten around this problem is the second—and more fundamental—point of confusion by the majority below.

B. The Federal Circuit Majority Never Distinguished Between "Software" as an Idea And "Software" as a Physical Product

The Federal Circuit majority's conclusion in this case flowed directly from its statement that "software code" is patentable. *See* 414 F.3d at 1369-72. Under the majority's rationale, software can be a patentable invention, so a portion of the software can be a "component" and can be "supplied" from the United States under Section 271(f).

All of that may be true, but it fails to distinguish between software as an idea or information, and software as an actual, physical product in the form of a golden master disk. Software as an idea or informa-

tion is intangible, while software as a product is tangible, in the form of bits stored on a particular piece of media (e.g., CD ROM, hard drive, Flash USB drive, and memory chips).

The distinction is important, because to find liability, the majority had to have considered software in its tangible, product sense—i.e., the golden master disk itself—as the "component," but to have considered software in its intangible, idea sense for the rest of the statute, because only the ideas (as copied onto another disk), and not the physical product, are ever combined into a complete apparatus outside the United States. In the end, the majority centered its lexicon, and by natural extension, its analysis, around a term—"software"—that is singularly confusing and non-descriptive in the context of this case. Like other terms in this appeal that have been bandied about—e.g., "code" and "programs"—the term "software" can be viewed by some as the non-actionable information, and by others as actual, physical product.

Numerous other descriptors that distinguish an idea or information from the product that carries forth the idea or information are much more descriptive and useful here than are terms such as "software" or "code." For example, each pairing below clearly distinguishes between that which might be a "component," from that which is embodied, but is different from, the component:

Idea, information	Product, implementation, embodiment, instantiation
Non-physical	Physical

Mere algorithm	Application of the algorithm
Mere data	Use of the data
Intangible	Tangible

If the majority had recognized the key distinction between software as an idea, on the one hand, and software as a physical product on the other, it would have encountered numerous problems with its analysis, and not just those pointed out by Judge Rader in his dissent.

First, a prior Federal Circuit panel had already recognized in 2004 that exporting ideas or information does ***not*** violate Section 271(f). In *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113, 1117-18 (Fed. Cir. 2004), the exported information was designs and instructions for making computer chips, and the Federal Circuit indicated that more was required than supply of intangible information (though carried on tangible paper or electronic storage devices) for creating tangible products overseas:

> [Section] 271(f) is clear on its face. It ***applies only where components of a patent invention are physically present in the United States and then either sold or exported*** 'in such a manner as to actively induce ***the combination of such components outside the Untied States*** in a manner that would infringe the patent if such combination occurred within the United States.'
>
> * * * *

> ***"[S]uppl[ying] or caus[ing] to be supplied" in §271(f) clearly refers to physical supply of components***, not simply to the supply of instructions or corporate oversight.

375 F.3d at 1117-18 (emphasis added).

The Federal Circuit majority here brushed *Pellegrini* aside by noting that it involved export of instructions for making a component, but not the component itself. *AT&T*, 414 F.3d at 1370. But because of the majority's non-discriminating view of "software," it failed to recognize that it is the ***intangible instructions*** from the golden master that produce the disk that is ultimately combined outside the United States, and not the tangible golden master itself. In short, the court's distinction over *Pellegrini* was wholly circular and was tied to its misuse of the term "software."

Second, even if intangible information or ideas could, in theory, be "components" of a patented invention, they definitely cannot in this case. As both Microsoft and AT&T have recognized, the invention in this case is a "speech-encoding apparatus." *See, e.g.*, AT&T Brief in Opposition, at i. Claim 24 of the patent defines that invention:

> 24. Apparatus for encoding a speech pattern comprising
>
> means for partitioning a speech pattern into successive time frames;
>
> means responsive to the frame speech pattern for generating for each frame a set of speech parameter signals;

> means responsive to said frame speech parameter signals and said frame speech pattern for generating a signal representative of the differences between said frame speech pattern and said frame speech parameter signal set;
>
> means responsive to said frame speech parameter signals and said differences representative signal for generating a first signal corresponding to said frame speech pattern; means responsive to said frame speech parameter signals for generating a second frame corresponding signal;
>
> means for generating a signal corresponding to the differences between said first and second frame corresponding signals; and
>
> means responsive to said frame differences corresponding signal for producing a third signal to modify said second signal to reduce the frame differences corresponding signal.

The claimed apparatus is physical because "means" limitations recite physical structure.[3] Thus, a component, or sub-part, of the apparatus would also have to be physical. While the ideas or informa-

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[3] Each of the separate so-called "means" limitations indirectly incorporates particular physical structures from the patent specification under the dictates of 35 U.S.C. § 112, para. 6. *See, e.g., Symbol Techs., Inc. v. Opticon, Inc.*, 935 F.2d 1569, 1575 (Fed. Cir. 1991) ("[T]he scope of [a claim that recites a 'means' for performing a function] is confined to structures expressly disclosed in the specification and corresponding equivalents.").

tion of the software may be ***implemented by*** portions of the apparatus, those non-physical ideas or information cannot be viewed logically as components, or sub-parts, of the physical apparatus. The AT&T claims also fit into the larger world because this Court and the Federal Circuit have repeatedly announced that software as a mere idea is not patentable because it does not fit into any of the categories of patentable subject matter under 35 U.S.C. § 101. *See, e.g., In re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994) (distinguishing non-patentable subject matter of "merely the information content of memory" from patentable subject matter of claims that "require specific electronic structural elements which impart a physical organization on the information stored in memory").

At bottom, the Federal Circuit majority—focusing on the term "software," rather than on the "patented invention" as commanded by Section 271(f)—never addressed the actual claims of the patent, which define the invention. The court never identified the "invention"—a necessary predicate to identifying the components of the "patented invention." If it had, it would have recognized that "the invention" is physical, so that the ideas and information represented by "software" cannot be considered to be "components" in this case.

In the end, the Federal Circuit majority has built a special rule for software, where the statute provides no basis for such a rule. The proper and general rule is that, while physical products can be components that are supplied ***and*** are combined overseas, ideas or information cannot. In short, the *Pellegrini* panel got it right.

This distinction—between information and products, between tangible and intangible, between the physical and the meta-physical—is a sensible rule that applies uniformly to all technologies (just like Section 271(f) does), including to areas that are not as admittedly complex to conceptualize as is software. Thus, for example, the export of a tire mold that "encodes" a particular functional and patented tire tread does not produce infringement for every single tire made overseas, where the mold itself is not combined overseas. The export of blueprints that encode information for building a device that might be covered by a patent does not produce infringement. And the e-mailing of a patent (which presumably contains information needed to practice the patent) to someone outside the United States does not give rise to liability either.[4] The underlying distinction between ideas and information, on the one hand, and physical products, on the other, provides a uniform construct for analyzing Section 271(f), and is fully consistent with the focus on physical components in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), and the enactment of Section 271(f) in response to *Deepsouth*.

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[4] The Federal Circuit majority brushed aside an analogy like these by asserting that software is "a different type of technology." 414 F.3d at 1372. It certainly is different, but not in any way that affects the proper Section 271(f) analysis or otherwise makes a difference. Indeed, compact disks themselves encode data in molded or burned pits. The analogies are thus very important to understand whether Section 271(f) is being read in a manner that is logical and can be applied consistently in the future.

CONCLUSION

For the foregoing reasons, the *Amicus* urges the reversal by this Court of the Federal Circuit's decision finding liability under Section 271(f).

Respectfully submitted,

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In the Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORPORATION,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR AMICUS CURIAE BAR OF DISTRICT OF COLUMBIA, PATENT, TRADEMARK & COPYRIGHT SECTION IN SUPPORT OF NEITHER PARTY

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In the Supreme Court of the United States

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MICROSOFT CORPORATION,

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AT&T CORPORATION

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF FOR *AMICUS CURIAE* BAR ASSOCIATION OF THE DISTRICT OF COLUMBIA — PATENT, TRADEMARK & COPYRIGHT SECTION IN SUPPORT OF NEITHER PARTY

THE INTEREST OF *AMICUS CURIAE*

The Patent, Trademark & Copyright Section of the Bar Association of the District of Columbia ("Association") respectfully submits this brief as *amicus curiae* in support of neither party.[1]

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[1] This *amicus curiae* brief is presented by the Patent, Trademark & Copyright Section of the Bar Association of the District of Columbia under Supreme Court Rule 37.3(a). The parties have consented to the filing of this *amicus curiae* brief via blanket letters of consent on file with the Court. In accordance with Supreme Court Rule 37.6, *amicus curiae* states that no counsel for a party authored any part of this brief. Only this *amicus curiae* made a monetary contribution to the preparation and submission of this brief. Counsel for *amicus curiae* prepared this brief on a *pro bono* basis.

The Association is one of the senior-most intellectual property bar associations in the United States, drawing its membership from government, industry and private practice. The Association and its members have a substantial interest in the adjudication of significant issues defining our patent laws, and only submit *amicus curiae* briefs when issues of such magnitude arise.

SUMMARY OF ARGUMENT

In order to avoid unintended consequences on foreign relations and policy, this Court traditionally construes the patent statute narrowly to avoid covering international activity absent clear Congressional intent to the contrary. Such judicial restraint has allowed Congress to carefully tailor the patent statute to achieve the proper balance among domestic and international priorities. Recent decisions by the Federal Circuit, however, have cast-off judicial restraint and ushered in a new era of judicial activism that drastically extends the extraterritorial reach of U.S. patent law into international activity. Rather than seek clear Congressional guidance, the Federal Circuit has assumed the role of making the tough international policy decisions that arise when the plain statutory language does not address accused infringing activities abroad. In this case, for example, the Federal Circuit broadly construed the statute beyond its plain meaning in order to cover the new exigencies presented by software technology. It is not clear what consequences this judicial extension will have on the domestic software industry that may find increased liability under U.S. patents and a backlash of liability under international patents as other countries react to impose similar liability into U.S. borders. Accordingly, the BADC recommends this Court return to Congress the important task of balancing international policies by reinstating long-standing precedent that requires the courts to narrowly construe the international reach of

U.S. patent law absent clear Congressional intent to the contrary.

ARGUMENT

A person infringes a U.S. patent under 35 U.S.C. 271(f)(1) by "suppl[ying] . . . from the United States all or a substantial portion of the components of a patented invention . . . [so] as to actively induce the combination of such components outside of the United States." (emphasis added) § 271(f)(2) states that is it an act of direct infringement to "suppl[y] . . . any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article." (emphasis added). While each sub-provision contains a modifier for the term "component," there is none for the term "suppl[y]."

The Federal Circuit in *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366 (Fed. Cir. 2005), however, construed the term "supply" broadly to encompass advances in technology. "Supply" in the context of software, according to the Federal Circuit, means to "essentially supply." *Id.* at 1370. As further discussed below, the Federal Circuit ended its analysis too soon when it failed to consider the admonitions of this Court to interpret narrowly the extraterritorial reach of patent laws so as to avoid unintended consequences on foreign relations and policy.

In its recent decisions implicating the extraterritorial reach of the patent laws, the Federal Circuit has consistently ignored this Court's guidance. *Microsoft* is not the only case in which the Federal Circuit stretched the patent laws to cover accused activity. We summarize a continuing pattern of Federal Circuit construction of patent law that suggests that the Federal Circuit has no guideposts to resolve extraterritoriality issues in view of evolving and complex technology. The Federal Circuit need only be reminded that

despite advancements in the subject matter of patented technology, the very same principles that applied in this Court's precedent are alive today.

A. This Court's Precedent Mandates a Narrow Interpretation of Patent Laws That Have Extraterritorial Effect

1. This Court Refused to Stretch the Reach of Our Patent Laws in *Deepsouth*

In *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 522 (1972), this Court considered whether § 271(a) applied to an accused infringer who assembled all but two components of a patented invention within the United States, and then shipped all of the components overseas for assembly.

Under §271(a), "whoever without authority makes, uses . . . or sells any patented invention, within the United States" directly infringes a patent. The invention claimed the combination of parts, and by shipping disassembled components, the invention as claimed was not technically "made" within the United States. The accused infringer understood and exploited this difference. *Id.* at 524, n.5.

The Fifth Circuit found liability by labeling the infringer's activity as the "substantial" manufacture of the invention. *Id.* at 527. "In the Fifth Circuit panel's opinion, [other] courts that previously considered the question worked themselves into . . . a conceptual box by adopting an artificial, technical construction of the patent laws, a construction, moreover, which in the opinion of the panel, (subverted) the Constitutional scheme of promoting the Progress of Science and useful Arts by allowing an intrusion on a patentee's rights." *Id.* at 525 (internal quotes omitted).

This Court, however, refused to stray from the plain language of § 271(a), which applied to one who "makes" – not "substantially makes" – a patented invention in the United States. While acknowledging the apparent loophole in § 271(a), this Court refused to impose liability where § 271(a) did not expressly do so. This Court rebuffed criticism that its conclusion was "too narrow and technical an interpretation of the statute," and held that it "we should not expand patent rights by overruling or modifying our prior cases construing the patent statutes, unless the argument for expansion of privilege is based on more than mere inference from ambiguous statutory language. We would require a clear and certain signal from Congress" before judicially expanding U.S. patent rights. *Id.* at 529, 531. *See also*, *Parker v. Flook*, 437 U.S. 584, 596 (1978) ("[i]t is our duty to construe the patent statutes as they now read . . ., and we must proceed cautiously when we are asked to extend patent rights into areas wholly unforeseen by Congress.")

The *Deepsouth* court was right. In response to *Deepsouth*, Congress did not merely change § 271(a) from "make" to "substantially make" a patented invention. Rather, Congress debated and crafted the complex provisions of Section 271(f)[2] (see complete text in footnote) that has

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[2] Section 271(f) states:

> (1) Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.
>
> (2) Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in

several substantive and procedural protections before liability attaches. No telling what harm this Court would have wrought had it not exercised the proper judicial restraint. Lessons learned from *Deepsouth* are that Congress, and not the judiciary, must address an expansion of the extraterritorial reach of our patent law.

2. This Court Considers Consequences on Foreign Policy and Relations

When considering even a plain meaning construction of a statute, this Court has accounted for the consequences of its construction and evaluated whether Congress intended the ramifications that would be wrought. Importantly, the Federal Circuit must not become the arbiter of foreign relations and policy for patent law through extraterritorial application.

In *Brown v. Duchesne*, 60 U.S. (19 How.) 183 (1856), a French schooner that voyaged between Boston and a colony of France, and had docked in Boston, was using an invention related to the rigging of a sailing ship. *Id.* at 193. The patent owner sued because the French schooner was using the invention in the United States, an activity that fell squarely within the plain text of the patent statute. A straight-forward construction of the statute without any heed to the international implications of such a construction would

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the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

have led to liability for foreign vehicles docked in American shores: "The general words used in the clause of the patent laws granting the exclusive right to the patentee to use the improvement, taken by themselves, and literally construed, without regard to the object in view, would seem to sanction the claim of the plaintiff." *Id.* at 194. Nevertheless, this Court held that the patent owner had no cause of action against the master of a French schooner.

This Court eschewed a plain meaning analysis of the patent law, and held that an interpretation of a patent right so broad as to label the French vessels' use of the invention as infringing "would confer on patentees not only the rights of property, but also political power, and enable them to embarrass the treaty-making power in its negotiations with foreign nations, and also [] interfere with the legislation of Congress when exercising its constitutional power to regulate commerce." *Id.* at 197. Accordingly, absent such intent by Congress, the Court refrained from construing the patent laws broadly. As in *Deepsouth*, Congress gave a clear signal codifying the holding in *Brown* in 1952. 35 U.S.C. 272 now states in relevant part that the use of an invention in any vessel, aircraft, or vehicle of any country, entering into the United States temporarily shall not constitute patent infringement if the invention is used exclusively for the needs of that vehicle.

B. The Federal Circuit Overstepped Its Authority in Broadly Interpreting Section 271(F)

In a series of cases, the Federal Circuit has expanded the international reach of U.S. patent law without a clear signal from Congress and without consideration of the ramifications of its decision. The issue here is not whether the end result of judicial activism is reasonable – it may be that Congress amends the statute to reach the same result

after exercising the full panoply of legislative investigation, debate and tough policy choices. The issue, rather, is whether the courts or Congress should act in the first instance when international activity does not clearly fall within the current statutory scheme.

1. NTP v. Research In Motion, Ltd.

In *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005), the Federal Circuit broadly construed §271(a) to cover accused infringing activity that occurred, at least in part, outside of the United States. Section 271(a) imposes liability whenever one "makes, uses, offers to sell, or sells, any patented invention, within the United States." (emphasis added). The Federal Circuit recognized that "[t]he grammatical structure of the statute indicates that 'within the United States' is a separate requirement from the infringing acts clause." *Id.* at 1315.

Defendant Research in Motion ("RIM") argued that it was not liable for direct infringement under §271(a) because it did not use the invention "within the United States." *Id.* at 1314. Part of the RIM accused system was in the United States and part was located in Canada. As such, some of the system operated here and other parts operated outside the United States.

Section 271(a) does not expressly account for the location of different components in combination patents, as acknowledged by the Federal Circuit. Indeed, the Federal Circuit conceded that "it is **unclear** from the statutory language how the territoriality requirement limits direct infringement where the location of at least a part of the 'patented invention' is not the same as the location of the infringing act." *Id.* at 1315 (emphasis added).

Despite the ambiguity in the statute, ignoring the admonition to "construe the patent statutes as they now read," and without a clear signal from Congress, the Federal Circuit fashioned a new control and beneficial use test for patent liability in order to cover the accused infringing activity. *Id.* at 1317. The control-beneficial test is analogous to use that is "essentially," "substantially," or "in effect" within the United States. In short, the Federal Circuit strayed from this Court's precedent by modifying the statute via "statutory construction" to cover what international activity it saw fit to cover, rather than seek clear Congressional guidance.

2. Union Carbide Chemicals & Plastics Technology Corp v. Shell Oil Co.

In *Union Carbide Chems. & Plastic v. Shell Oil Co.*, 425 F.3d 1366, 1378-79 (Fed. Cir. 2005), Shell Oil supplied an unpatented catalyst to its own foreign subsidiaries to be used abroad in a process patented in the United States. The district court excluded damages based on the sale of the catalyst because it held that §271(f) did not apply to process claims.

The Federal Circuit remanded for additional findings as to whether Shell could be liable under §271(f). In its decision, the Federal Circuit did not mention *Deepsouth*. Nor did that court consider the intent of Congress when it enacted §271(f) or even discuss the consequences of a broad interpretation of that provision.

Nothing in §271(f) states that a component, to be used in a step of a process, subjects a party to liability. Nevertheless, the Federal Circuit stretched 271(f) to cover Shell Oil's shipment of a catalyst for use in a patented process to be performed outside the United States.

3. AT&T v. Microsoft

In *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1367 (Fed. Cir. 2005), Microsoft transmitted master versions of object code abroad to foreign computer manufacturers who replicated the code and installed foreign-made copies on foreign-assembled computers. The Federal Circuit ruled that the shipment of the master version of a software disk exported from the United States led to liability for each copy under Section 271(f): "All of such resulting copies have *essentially* been supplied from the United States." *Id.* at 1370 (emphasis added). It explained that copying of a master version, is part and parcel of software distribution. *Id.* Therefore, "for software 'components,' the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." *Id.*

The Federal Circuit's holding was grounded in the fact that § 271(f) must be interpreted in a manner that is appropriate to the technology at issue, and so that the statutes remain effective in light of rapidly changing technology. *Id.* at 1371.

Without discussion as to whether the Federal Circuit properly construed "supply," it is abundantly clear that the statute does not impose liability for "essentially" or "substantially" supplying a component. Either § 271(f) covers Microsoft's conduct or it does not. Absent a clear and certain signal from Congress, the Federal Circuit's interpretation of § 271(f) impermissibly expanded its reach.

C. The Federal Circuit's Analysis Did Not Consider TRIPS

The United States must honor its treaty obligations under the World Trade Organization's Agreement on Trade-

Related aspects of Intellectual Property Rights ("TRIPS"). Judge Rader in his dissent in *Microsoft* notes that the majority's decision may violate the international treaty, TRIPS, which mandates that all inventions be treated in the same manner. *Id.* at 1374 (Rader, J., dissenting). "Patents shall be available and patent rights enjoyable without discrimination as to the place of invention [] [and] the field of technology . . . ." (emphasis in original). *Id.*

Again, the majority decision of the Federal Circuit is guided by the software technology in dispute. Liability based on technology may violate the U.S. obligations under TRIPS. Regardless of whether a violation of TRIPS has occurred, the Federal Circuit should be cognizant of possible missteps that would cause the United States to suffer international repercussions. This is precisely why Congress, not the courts, should be the first to act in instances where the current statutory scheme does not clearly cover international activity.

CONCLUSION

The BADC respectfully requests this Court reconfirm its long-standing precedent that narrowly construes the patent statute to avoid covering international activity absent a clear indication from Congress to the contrary.

Respectfully submitted,

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MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORPORATION,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* BAYHDOLE25, INC. SUPPORTING RESPONDENT

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IN THE

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MICROSOFT CORPORATION,
Petitioner,

v.

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On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* BAYHDOLE25, INC. SUPPORTING RESPONDENT

INTEREST OF *AMICUS CURIAE* BAYHDOLE25, INC.[1]

BayhDole25, Inc. ("BayhDole25") (www.BayhDole25.org) is a non-profit, non-governmental organization named after the Bayh-Dole Act of 1980 ("Bayh-Dole") and founded on the twenty-fifth anniversary of that Act. Bayh-Dole revolutionized technology transfer by authorizing licensing of government-owned patent rights and other intellectual property and jump-starting the biotechnology revolution.[2] Before Bayh-Dole, a

[1] Rule 37.6 statement: Counsel on the brief and BayhDole25 Board Members are its sole authors and no other person or entity made any monetary contribution to its preparation or submission. The parties have filed letters with the Court consenting to all *amicus* briefs.

[2] *See generally, The Bayh-Dole Act at 25*, BayhDole25, Inc., Mar. 16, 2006, http://www.bayhdole25.org/resources (last visited on Jan. 21,

Government Accountability Office study found that only a small percentage of the 28,000 patents from federally funded scientific research were licensed for commercial use.[3] Bayh-Dole enabled commercialization of formerly neglected federally funded research, providing a high return on the taxpayer's investment in basic science in the form of medical innovation and improving health outcomes through the creation of high-technology and biotechnology sectors.[4]

BayhDole25 provides non-partisan educational information about Bayh-Dole and subsequent related technology transfer legislation in an effort to improve public awareness of the importance of Bayh-Dole policies to U.S. biotechnology pre-eminence. BayhDole25's board includes biotechnology pioneer Dr. Ananda M. Chakrabarty, who received the first patent for a genetically modified bacterium as a result of *Diamond v. Chakrabarty*, 447 U.S. 303 (1980). Dr. Chakrabarty is a distinguished professor of microbiology and immunology at the University of Illinois College of Medicine and founder of CDG Therapeutics, a U.S. biotechnology company engaged in clinical research on novel approaches to cancer therapies. BayhDole25 has accepted no outside funding from the biotechnology or information and communication technology industries, individual companies, or universities and research institutions.

BayhDole25 has a substantial interest in the questions on which the Court granted review—namely, whether intangible information may be a "component[] of a patented invention" and whether transmission of such intangible information

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2007). Roughly 70% of licenses under Bayh-Dole have been in biotechnology. *See id.* at 24.

[3] *The Bayh-Dole Act at 25*, *supra* note 2, at 13.

[4] *See* Michael J. Remington, *The Bayh-Dole Act at Twenty-Five Years: Looking Back, Taking Stock, Acting for the Future*, 17 J. of the Ass'n Univ. Tech. Managers (AUTM) 15, Summer 2005.

constitutes "suppl[y] from the United States" within the meaning of 35 U.S.C. § 271(f). In particular, BayhDole25 is concerned that the Court not answer those questions on the ambiguous and incomplete stipulated facts of record in this appeal and that it is aware that negative answers to those questions would have a harmful effect on the biotechnology industry. BayhDole25 hopes that its familiarity with the biotechnology industry and financial and editorial independence will provide a useful perspective to the Court.

SUMMARY OF ARGUMENT

Microsoft's own admissions and the parties' stipulation establish Microsoft's liability under 35 U.S.C. § 271(f). Microsoft concedes that an electronic transmission of object code is sufficiently physical to be a "component[] of a patented invention" for purposes of 35 U.S.C. § 271(f). *See* Pet. Br. 42. The parties stipulated in the district court that Microsoft's foreign original equipment manufacturers ("OEMs") and replicators decrypted and installed those electronic transmissions onto foreign computer systems. *See* Pet. App. 46a ¶ 7. The combination of those electronic transmissions and the foreign computer hardware is the patented apparatus specified in AT&T's '580 patent. By electronically transmitting the object code "from the United States" (Pet. Br. 8), Microsoft "supplie[d]" a "component[] of a patented invention" for purposes of 35 U.S.C. § 271(f).

Although the electronic transmissions do not establish the *extent* of Microsoft's liability under 35 U.S.C. § 271(f), the extent of Microsoft's liability is not relevant under the settlement agreement that generated this appeal. The parties settled their dispute with an "unconditional settlement payment" plus an "additional settlement payment" if Microsoft's "liability" is upheld on appeal. Pet. App. 41a, 42a ¶¶ 1, 5. If this Court determines that Microsoft is liable under § 271(f) for its electronic transmission of object code to foreign OEMs

and replicators, then Microsoft is liable under the settlement agreement. The Court need not, and therefore should not, decide anything more, particularly given the ambiguous and incomplete state of the stipulated factual record.

Judicial restraint is particularly warranted because reversal on the *ratio decidendi* proposed by Microsoft would have a harmful effect on the biotechnology industry. Microsoft and its *amici* contend that intangible information cannot be a "component[] of a patented invention." But intangible assets represent 70% of the assets of U.S. industry and are critical to the U.S. biotechnology industry. Microsoft and its *amici* also contend that any doubts should be resolved in Microsoft's favor by a presumption against extraterritorial application of U.S. law. Congress has demonstrated its intent to act extraterritorially, however, both specifically in regards to 35 U.S.C. § 271(f) and more generally by legislating to enforce U.S. IP law globally.

ARGUMENT

I. THE JUDGMENT IN FAVOR OF AT&T SHOULD BE AFFIRMED BECAUSE MICROSOFT'S ELECTRONIC TRANSMISSIONS OF OBJECT CODE MAKE IT LIABLE UNDER 35 U.S.C. § 271(f)

Microsoft, the government, and Microsoft's *amici* elide any sustained analysis of Microsoft's liability under 35 U.S.C. § 271(f) for Microsoft's electronic transmission of object code. Since Microsoft's liability for the "additional settlement payment" (Pet. App. 42a ¶ 5) is established if it is liable under § 271(f), however, this appeal may be decided based on Microsoft's liability for electronically transmitting its object code without reaching the more difficult questions of whether intangible information may itself constitute a "component[] of a patented invention" or whether golden

master disks were "components" "supplie[d] from the United States" under § 271(f).

Microsoft's electronic transmissions of object code are "components" of AT&T's patented apparatus because the recording (installation) of those transmissions on foreign computer hard drives creates the patented apparatus described in AT&T's '580 patent. Microsoft's electronic transmissions of object code "supply" those components "from the United States."

A. Microsoft's Electronic Transmissions of Object Code Are "Components of a Patented Invention" within the Meaning of 35 U.S.C. § 271(f)

1. The parties agree that an electronic transmission of object code may be a "component[] of a patented invention" within the meaning of 35 U.S.C. § 271(f). AT&T contends that the intangible object code itself may be a component. *See* Second Supp. Cert. Br. 4. For its part, Microsoft concedes that object code may be a "component of a patented invention." Pet. Br. 34 n.9. Microsoft argues, however, that the object code must be "machine readable" and fixed in some "physical media." *Id.*[5] According to Microsoft's analysis, "an electromagnetic impulse" would appear to be a sufficient "physical manifestation" to make object code a "component[]" for purposes of 35 U.S.C. § 271(f). Pet. Br. 42.

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[5] *See* Pet. Br. 38 ("Such a digital sequence can direct a general purpose computer to function as the device claimed in the patent only when it is readable and executable by a computer. A digital sequence that exists only in the ether is neither."); *id.* at 40 n.12 (semble); Gov't Br. 10-11 ("The relevant component, however, is the actual, machine-readable physical copy of the software installed on a particular computer, not the software in the abstract.").

2. Microsoft contends that its electronic transmissions of object code are not "components of a patented invention," however, because intermediate copies are made overseas:

> Each foreign manufacturer instead uses the master version to produce, in the foreign country, *duplicate copies* of the Windows object code. [Pet. App.] 45a-46a ¶¶ 5-7. It is these copies, and only these copies, that are installed on foreign-manufacturer computers. *Id.* at 46a ¶ 9.

Pet. Br. 4 (emphasis added) (footnote omitted).[6]

The government similarly contends that Microsoft's electronic transmissions of object code are not installed on foreign computers, but that intermediate copies are made and those copies are installed:

> Alternatively, petitioner sometimes provides the Windows object code to foreign computer manufacturers and replicators via encrypted electronic transmission. The transmitted code is then decrypted *and copied, and the copies are installed* on foreign computer products. Pet. App. 45a-46a.

Gov't Br. 4 (emphasis added).

But the parties did not stipulate that an intermediate copy is made before installation of the electronically transmitted object code. Instead, the appendix citation to which both Microsoft and the government refer suggests that the only

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[6] *See* Pet. Br. 7 (Microsoft's contention that the Federal Circuit "incorrectly concluded that *copies* of the object code for the Windows operating system made in a foreign country are nonetheless 'supplie[d] . . . from the United States' . . . .") (Microsoft's emphasis); *id.* at 13 ("foreign-produced copies of the object code for the Windows operating system . . . were made overseas"); *id.* at 33 ("To be sure, Microsoft knows that foreign manufacturers will use the golden master disks and encrypted transmissions to make copies of the Windows object code; but those copies are made overseas.").

"copies of the object code for the Windows operating system software" are on the "computer hardware"—that is, the foreign computers' hard drives (Pet. App. 46a ¶ 7) (emphasis added):

> Microsoft also supplies its Windows operating system object code from the United States to certain foreign OEMs and authorized foreign replicators by sending to foreign OEMs and replicators a single encrypted transmission of the object code. The foreign OEMs and replicators *decrypt the transmission and install copies of the object code for the Windows operating system software onto computer hardware*, to form computer systems, and *optionally* create CDs or other media with a copy of the same.

It is thus entirely consistent with the stipulated facts of record on this appeal for the encrypted electronic transmissions to have been uploaded from a Microsoft server in Redmond, Washington to foreign computers' hard drives, much like Microsoft might send a software update or security patch to an individual's personal computer hard drive over the Internet. By whatever manner the electronically transmitted object code is in fact installed on the foreign computers' hard drives, the parties did not stipulate to an intermediate copy.

3. Even if the electronically transmitted object code is installed without an intermediate copy, it is still open to Microsoft to argue that the "component[]" that Microsoft supplied (*i.e.*, the object code in the form of "electromagnetic impulse[s]" (Pet Br. 42)) is not the same as the object code installed on the foreign computers (*i.e.*, the object code in the form of "magnetically charged bands" on hard drives (Pet. Br. 23)). Neither Microsoft nor the government appears to

make that argument,[7] however, and it should be rejected, for two reasons.

First, the electronically transmitted object code is installed directly on the foreign computers' hard drives. *See* Pet. App. 46a ¶ 7 ("The foreign OEMs and replicators decrypt the transmission and *install copies of the object code* for the Windows operating system software *onto computer hardware*, to form computer systems, and *optionally* create CDs or other media with a copy of the same.") (emphasis added). Although each foreign computer's hard drive contains a copy of the object code, that copy was recorded from the electronic transmission—the "component[]"—supplied by Microsoft from the United States.

Second, if a change in physical format from "electromagnetic impulses" (Pet. Br. 42) to "magnetically charged bands" (Pet. Br. 23) is sufficient to change the nature of the "component[]" for purposes of 35 U.S.C. § 271(f), then no limiting principle prevents Microsoft from uploading software from its Redmond, Washington headquarters and installing it directly onto foreign computers, notwithstanding the patent rights of inventors in this country.

The only question remaining for Microsoft's liability under 35 U.S.C. § 271(f) is whether Microsoft "suppl[ied]" the electronic transmissions "from the United States."

B. Microsoft "Suppl[ied]" Electronic Transmissions of Object Code "from the United States" for Purposes of 35 U.S.C. § 271(f)

Microsoft concedes that it supplied the electronic transmissions from the United States. *See* Pet. Br. 8 ("The only things Microsoft furnishes from the United States are the

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[7] *But see* Pet. Br. 4 n.2 ("[T]he 'installation' process itself involves an act of duplication.").

golden master disks and encrypted transmissions containing master versions of the Windows object code."); *see also id.* at 13, 34, 35. Those electronic transmissions are sufficient to establish Microsoft's liability under § 271(f) and resolve this appeal. *Cf.* Gov't Br. 25-26 n.2 ("If petitioner sent copies of its Windows software from the United States to a foreign country and those copies were loaded onto computers, petitioner would likely be liable under Section 271(f) for each such infringing copy."); Pet. App. 36a n.7 (Microsoft's concession of liability if it supplied individual disks of object code).

* * * * *

Microsoft's electronic transmission of object code for installation onto foreign computers' hard drives establishes its liability under 35 U.S.C. § 271(f) and resolves this appeal under the parties' settlement agreement. That agreement makes Microsoft liable for the "additional settlement payment" (Pet. App. 42a ¶ 5) because it establishes Microsoft's "liability under 35 U.S.C. § 271(f)" (Pet. App. 41a).[8]

C. The Court Need Not and Therefore Should Not Decide Whether Intangible Information May Ever Be a "Component[] of a Patented Invention" or "Suppl[ied] . . . from the United States" under 35 U.S.C. § 271(f) Because of the Ambiguous and Incomplete Stipulated Facts of Record on This Appeal

The ambiguous and incomplete stipulated facts prevent close analysis of the questions on which this Court granted review.

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[8] Although Microsoft suggests that it would face "staggering liability" if it were held to have induced the infringement of "tens of millions of foreign-produced copies" (Pet. Br. 24), no facts of record on this appeal support the suggestion that the stipulated "additional settlement payment" imposes any material liability (Pet. App. 42a ¶ 5), or is anything other than a small percentage license fee on the overseas royalties Microsoft has already collected.

1. On the first question presented, the parties disagree on whether the "component[]" is the object code or the containers for that code (*i.e.*, the golden master disks and encrypted electronic transmissions). The parties' stipulation is ambiguous. *See* Pet. App. 47a ¶ 10 ("The parties agree that, other than the 'golden master disks' and the encrypted transmissions of Windows object code, Microsoft does not supply any 'component' from the United States for assembly abroad."). If "component" in the stipulated paragraph refers back to the "'golden master disks' and the encrypted transmissions," then the containers are the components. If "component" in the stipulated paragraph refers back to "Windows object code," then the code is the component.

Subsequent briefing does not clarify the stipulation's ambiguity regarding the "component[]." In its merits brief, Microsoft simply deletes the phrase "of Windows object code" from the stipulation, replaces the deletion with ellipses, and asserts that the parties stipulated that the components are "the 'golden master disks' and the encrypted transmissions." Pet. Br. 37. For its part, AT&T reads the stipulation to refer to the object code. *See* Second Supp. Cert. Br. 4.

The district court, which is closest to the stipulation, read the stipulation to define the component as the object code itself. *See* Pet. App. 42a ("Based on the stipulated facts, the Court has determined that the golden master disks and the encrypted transmissions of Windows object code *contain* 'components' supplied from the United States by Microsoft within the meaning of 35 U.S.C. § 271(f) . . . .") (emphasis added).[9] The majority of the court of appeals also read the

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[9] *See also* Pet. App. 29a ("The object code or software that is contained on each golden master disk or transmitted electronically, as opposed to the golden master disk or method of encrypted transmission itself, is at the heart of the parties' dispute and this Court's analysis."); *id.* at 34a-35a ("In this action, the object code at issue actually contains the patented

stipulation to define the component as the object code (*see* Pet. App. 8a ("In the present case, what is being supplied abroad is an actual component, *i.e.*, the Windows® operating system . . . .")), but the dissent read it to mean the golden master disks (*see* Pet. App. 15a-16a ("The German and Japanese manufacturers do not install the actual component 'supplied' from the U.S. (the master disc).").

The parties are similarly unable to agree whether the "component[]" is a staple component (implying liability under 35 U.S.C. § 271(f)(1)) or a specialized component (implying liability under 35 U.S.C. § 271(f)(2)). *See* Pet. Br. 12 n.3.

It goes without saying that the Court cannot decide whether something is a "component[] of a patented invention" without knowing what that something is. At bottom, the "component[]" issue presented on this appeal turns on the Court's interpretation of a factual stipulation in the district court. This appeal comes perilously close to an advisory opinion on shifting and disputed facts.

2. The record on whether Microsoft "supplie[d]" a "component[] of a patented invention" "from the United States" is similarly undeveloped. Microsoft raised the supply question as an afterthought for the first time in its reply brief in the district court and AT&T responded orally at argument. *See* Pet. App. 25a, 35a. What is more, the answer to the supply question depends on what "component[]" Microsoft allegedly "supplie[d]." The stipulation's ambiguity on the "component[]" issue thus infects the "suppl[y]" issue as well.

The issues on appeal are too important to be decided on ambiguous and incomplete stipulated facts. The Court should refrain from deciding more than it must to determine Microsoft's liability under 35 U.S.C. § 271(f). Liability may

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codecs . . . and the infringing code is sent overseas to be incorporated directly into the end-product abroad.").

be grounded on Microsoft's electronic transmissions of object code from the United States. The Court need not, and therefore should not, reach the broad rationales for reversing proposed by Microsoft.

II. THE JUDGMENT SHOULD NOT BE REVERSED ON THE *RATIO DECIDENDI* PROPOSED BY MICROSOFT BECAUSE THE PRECEDENT WOULD HAVE A HARMFUL EFFECT ON THE BIOTECHNOLOGY INDUSTRY

BayhDole25 recognizes that the strength of the patent licensing system relies on the integrity of the patents that underlie it and thus understands some of the concerns raised by *amicus curiae* Eli Lilly.[10] As Congressman Lamar Smith stated in recent hearings on patent litigation, "the patent system should reward creativity, not legal gamesmanship."[11] The ongoing review of the Patent Code by Congress provides ample opportunity for all parties in this case to inform the legislature of their concerns regarding the protection of intangible intellectual property ("IP") and extraterritorial enforcement of U.S. IP rights. In the meantime, however, the judgment of the Federal Circuit should not be reversed on the misconception that intangible IP cannot be a component of a patented invention or misunderstandings regarding the extraterritorial enforcement of U.S. IP rights.

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[10] *See generally* Brief of *Amicus Curiae* Eli Lilly and Company in Support of Petitioner.

[11] *Patent Trolls, Fact or Fiction?: Hearing Before the Subcomm. on Courts, the Internet and Intellectual Property of the H. Comm. on the Judiciary*, 109th Cong. 8-9 (June 15, 2006) (opening statement of Rep. Lamar Smith, Chairman, Subcomm. on Courts, the Internet, and Intellectual Property).

A. The Judgment Should Not Be Reversed on the Ground that Intangible Information Cannot Be a "Component[] of a Patented Invention" within the Meaning of 35 U.S.C. § 271(f)

Microsoft, Autodesk, BSA, and other *amici* seek an explicit exception from patentability for intangible goods.[12] There is no principled basis or empirical support,[13] however, for the proposition that the patent licensing system should not apply to so-called "intangibles."[14] As Paul Graham, the software designer who helped develop Yahoo, explains: "Frankly it surprises me how small a role patents play in the software business. It's kind of ironic, considering all the dire things experts say about software patents stifling innovation, but when one looks closely at the software business, the most striking thing is how little patents seem to matter."[15] The

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[12] Microsoft asserts that software can only be considered a patentable component where "recorded on machine readable media." Pet. Br. 11, 13; *see* Brief of *Amicus Curiae* Autodesk, Inc. ("Autodesk Br.") 7; Brief of *Amicus Curiae* Business Software Alliance ("BSA Br.") 27.

[13] Intel admits that "no one knows for sure what will happen if this Court affirms the decision below." Brief of Intel Corporation as *Amicus Curiae* in Support of Petitioner ("Intel Br.") 20.

[14] The Business Software Alliance predicts "unforeseeable risk and unbounded liability for software and computer companies" should software code be considered a "component." BSA Br. 9. That assertion is implausible. If important patented components are needed for U.S. software development, the software company should license those patented components and remove any uncertainty about cost and liability for infringement. If the patented components are not needed for U.S. software development, then there is no risk of infringement for overseas sales.

[15] Paul Graham, *Are Software Patents Evil?*, Mar. 2006, http://www.paulgraham.com/softwarepatents.html (last visited on Jan. 16, 2007). Graham continues: "[D]espite the huge number of software patents there's not a lot of suing going on." Graham also notes: "One thing I do feel pretty certain of is that if you're against software patents, you're against patents in general. Gradually our machines consist more and more of software. Things that used to be done with levers and cams and gears

establishment of the precedent sought by Microsoft and its *amici* would provide little benefit to those parties but would be extremely damaging to future innovation in the biotechnology industry.

1. *Intangible assets are critical to the U.S. economy*

Since the 1980's there has been an historic shift in the share of U.S. corporate value represented by intangible assets, to the point that intangible assets now represent approximately 70% of the assets of U.S. industry.[16] This shift from tangible to intangible assets has been caused by the growth of intangible assets held by all companies as well as the increasing relative importance in the U.S. economy of so-called knowledge economy companies "such as Microsoft, Cisco, eBay, Amazon, and all manner of pharmaceutical and biotech companies"; "even companies such as Walmart exhibit in 2005 high market valuations and significant relative percentages of intangible assets."[17]

Because of the increasing importance of intangible assets, any decision to exempt assets from patent protection and

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are now done with loops and trees and closures. There's nothing special about physical embodiments of control systems that should make them patentable, and the software equivalent not." *Id.*

[16] "It is widely recognized that in just a 'patent lifetime' (e.g. 20 years), such balance sheets have been transformed from predominately tangible assets such as plants (factories), property (land) and equipment (so-called PPE), and other tangible assets such as cash and receivables, to being dominated by intangible assets. Estimates of the shift in relative importance of intangible assets using, for instance the S&P 500 ® index, suggests that tangible assets were about 70% of total assets just 20 years ago but today it is intangible assets that are about 70% of total assets." Richard Razgaitis, *U.S./Canadian Licensing in 2005—Survey Results*, les Nouvelles, 41 J. of the Licensing Executives Soc'y Int'l 233, 233 (2006).

[17] *Id.* at 233 n.5.

licensing obligations based on their intangibility would have profound and negative consequences for the U.S. economy and the ability of U.S. companies to compete globally.

2. *Intangible assets are critical to the biotechnology industry*

Digital goods and genetic code are essentially similar. Both are easily replicable. And both are *intended to be replicated* without impact on the original. Just like object code sent abroad, cell lines, transgenic embryos, and patented seeds may all be easily sent overseas. From that genetic material, it is possible to replicate and grow literally billions of copies without changing or affecting the original. This progeny of genetic code is functionally equivalent to digital copies of software.

The biotech business model requires the investment of extremely large amounts of capital (up to a billion U.S. dollars) for long periods of time (eight to twelve years) to develop novel products. *Amicus curiae* Software & Information Industry Association ("SIIA") correctly notes that "high-technology producers invest massive amounts of time and money to develop single prototypes and templates that, after the huge initial investment, can be easily reproduced to make thousands or millions of perfect copies."[18] Furthermore, "[t]he same basic arrangement occurs in the pharmaceutical industry, which spends billions of dollars to develop and test protoypes that can later be reproduced cheaply."[19] While it is not possible to reverse-engineer genetically modified organisms (GMOs) on the basis of instructions, it is extremely cost-effective for a competitor to commercialize GMOs patented

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[18] Brief of the Software & Information Industry Association as *Amicus Curiae* ("SIIA Br.") 15.

[19] *Id.*

in the U.S. in another market using one sample of patented genetic material that would itself remain unchanged.

Contrary to other assertions made in the SIIA *amicus* brief,[20] however, university and other biotechnology entrepreneurs (or bio-preneurs) do not welcome widespread copying of their inventions by American competitors, either for U.S. or foreign sale. Instead, they rely on licensing revenues in order to recoup their investments. An exception to the patent law based on the intangibility of goods would undermine the ability of small biotechnology entrepreneurs to gain access to venture capital or other funding needed for innovative research and commercialization. As in the broader economy, patent protection for intangible biotechnology inventions is critical to continued U.S. preeminence in the biotechnology industry.

B. The Judgment Should Not Be Reversed by Applying a Presumption Against Extraterritoriality to Components "Supplie[d] from the United States" under 35 U.S.C. § 271(f)

The presumption against extraterritoriality should not be applied to resolve in Microsoft's favor any perceived ambiguity as to whether that company's supply of object code to foreign manufacturers violated 35 U.S.C. § 271(f). Congress has demonstrated its intent to act extraterritorially both specifically in regards to 35 U.S.C. § 271(f) and more generally to enforce U.S. intellectual property law globally.[21]

Specific extraterritorial intent is clearly expressed in § 271(f), which directly addresses the combination of components "out-

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[20] *See* SIIA Br. 19.

[21] Petitioner acknowledges that the presumption against extraterritoriality does not apply where Congress expresses its intent for a statute to have an extraterritorial effect. *See* Pet. Br. 30 (citing *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991)).

side the United States." The legislative history identifies the primary purpose of the statute as "to avoid encouraging manufacturing outside the United States."[22]

Congress has demonstrated its general intent to enforce U.S. IP law globally by legislating under the Trade Act of 1974[23] to mandate foreign compliance with U.S. IP standards through the Generalized System of Preferences ("GSP") provisions (requiring respect for IP rights in order to gain GSP benefits),[24] as well as through the Andean Trade Preferences ("ATP") provisions (prohibiting the President from providing benefits to any country that "has taken steps to repudiate or nullify . . . (ii) any patent, trademark, or other intellectual property"),[25] and the annual National Trade Estimate ("NTE") (requiring the U.S. Trade Representative ("USTR") to "identify and analyze acts, policies, or practices of each foreign country which constitute significant barriers to . . . United States exports of goods or services (including . . . property protected by trademarks, patents, and copyrights exported or licensed by United States persons")).[26]

By far the clearest example of IP legislation with clear extraterritorial intent is "Special 301,"[27] where "Congress

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[22] *Section-by-Section Analysis: Patent Law Amendments of 1984*, 130 Cong. Rec. H10,525 (daily ed. Oct. 1, 1984), *reprinted in* 1984 U.S.C.C.A.N. 5827, 5827.

[23] 19 U.S.C. §§ 1201 *et seq. See generally* Harry W. Kopp, *Commercial Diplomacy and the National Interest* 79 (2004) (discussing Congress' "preoccupation" with enforcing trade agreements abroad).

[24] 19 U.S.C. §§ 2461-67.

[25] 19 U.S.C. §§ 3201-06 (expired Dec. 31, 2006, and superseded by the U.S./Andean Free Trade Agreement).

[26] 19 U.S.C. § 2241.

[27] 19 U.S.C. § 2242 (entitled "Identification of countries that deny adequate protection, or market access, for intellectual property rights" and providing extraterritorial protection for U.S. intellectual property rights holders, including under U.S. patent, copyright, and trademark statutes).

gave private parties—firms, trade associations, labor unions or any other 'interested party'—the right to petition USTR to investigate specific foreign policies or practices and to act against them if warranted."[28] The charge for such extra-territorial enforcement of domestic IP law was again led by the copyright industries,[29] and those industries continue to actively benefit from the Section 301 process. As described by the International Intellectual Property Alliance ("IIPA"), which represents the copyright and patent interests in the annual Special 301 process and counts as a member *amicus curiae* Business Software Alliance ("BSA")—and, by extension, Microsoft, a founding member of BSA[30]—Special 301 is "a full time process for the copyright industries which work with local private sector representatives, U.S. government officials, and U.S. Embassy officials to address and resolve copyright problems in scores of countries."[31] Through Special 301, IIPA member BSA (and by extension, its member Microsoft) are currently engaged in the

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[28] Kopp, *supra* note 23, at 79.

[29] Michael Ryan, *Knowledge Diplomacy: Global Competition and the Politics of Intellectual Property* 11 (1998). ("The mobilization of the copyright interests led Congress to amend the 1974 Trade Act's section 301 in 1984 to declare that failure to protect intellectual property was an unfair trade barrier that could provoke U.S. retaliation. In 1998 the copyright mobilization led, through another amendment to section 301, to the institutionalization of intellectual property rights as a regular, annual issue for surveillance and action.").

[30] BSA was founded in 1988 by Microsoft and five smaller software companies, and has traditionally received high level support from senior Microsoft officials and its outside counsel. A full list of current BSA members is available at http://www.bsa.org/usa/about/BSA-Members.cfm

[31] *See* IIPA Comment on Special 301, http://www.iipa.com/special 301.html (last visited Jan. 19, 2007).

extraterritorial enforcement of U.S. IP law in more than sixty countries.[32]

Congress has continued to legislate extraterritorially despite foreign criticism[33] because "in a globalized world . . . 'the only remaining sources of true competitive advantage are technologies that others do not have, copyrights they cannot infringe or brand names that set one apart. None of these is possible without systems for protecting patents, copyrights and trademarks.'"[34] Given BSA and Microsoft's strong support for and active participation in extraterritorial IP enforcement programs such as Special 301, it is inconsistent

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[32] *See* Press Release, BSA, *Tech Industry Recommends Countries for Special 301 Consideration*, Feb. 10, 2006, http://www.bsa.org/usa/press/newsreleases/Tech-Industry-Recommends-Countries-for-Special-301-Consideration.cfm (last visited Jan. 19, 2007).

[33] Microsoft and its *amici* cite the potentially negative reaction of U.S. trade partners as a reason to reverse the judgment below. In fact, U.S. trade partners have long objected to Congress' cross-border enforcement of U.S. IP laws—copyright, trademark, and patent—to little effect. The World Trade Organization provides a formal international venue for complaints about the United States' extraterritorial IP enforcement actions, and U.S. trade partners have made active use of that venue. *See, e.g.*, Trade Policy Review, *Minutes of the 1999 WTO Trade Policy Review*, WT/TPR/M/56, (Aug. 11, 1999) (complaints about U.S. cross-border IP enforcement measures by the Governments of Chile, India, Cuba, and Egypt); Trade Policy Review, *Press Release and Chairperson's Conclusions* ¶ 7, PRESS/TPRB/173, (Sept. 17, 2001) ("On intellectual property, the United States was urged to align its practices more closely with those of other Members, including by adopting the first-to-file system, eliminating trade restrictive aspects of the patent system . . . Concern was expressed with respect to the WTO compatibility of Special 301 investigation provisions."). Congress, however, has placed greater weight on U.S. strategic commercial interests in protecting innovative technologies than on the views of our trade partners. That judgment should be respected by declining to apply a contrary presumption against extraterritoriality.

[34] Kopp, *supra* note 23, at 70 (quoting economist Lester Thurow).

for Microsoft (and BSA) to now attempt to evade liability under § 271(f) by invoking the presumption against extra-territoriality.

CONCLUSION

For the foregoing reasons, the judgment of the United States Court of Appeals for the Federal Circuit should be affirmed.

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In The Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORPORATION,

Respondent.

On Writ Of Certiorari To The United States Court Of Appeals For The Federal Circuit

BRIEF OF THE BUSINESS SOFTWARE ALLIANCE AS AMICUS CURIAE SUPPORTING PETITIONER

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QUESTIONS PRESENTED

(1) Whether digital software code – an intangible sequence of "1's" and "0's" – may be considered a "component[] of a patented invention" within the meaning of 35 U.S.C. § 271(f)(1);

– and, if so, –

(2) Whether copies of such a "component[]" made in a foreign country are "supplie[d] . . . from the United States."

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INTEREST OF THE BUSINESS SOFTWARE ALLIANCE[1]

The Business Software Alliance (BSA) promotes global policies that foster innovation, growth and a competitive marketplace for commercial software and related technologies. BSA's membership in the commercial software industry relies on the strength and predictability of United States patent law both to promote innovation by ensuring the enforceability of patents and also to foster United States industry by delineating the proper scope of United States patent law. Foreign sales on average represent 50 percent of total revenues for BSA member companies. BSA therefore has a strong interest in the proper application of patent laws, especially where, as here, the lower court has broadened their reach to encompass purely foreign actions.

The members of the Business Software Alliance include Adobe Systems, Inc., Apple Computer, Inc., Autodesk, Inc., Avid Technology, Inc., Bentley Systems, Inc., Borland Software Corporation, Cadence Design Systems, Inc., Cisco Systems, Inc., CNC Software/Mastercam, Inc., Dell, Inc., Entrust, Inc., Hewlett-Packard Company, IBM Corporation, Intel Corporation, Macromedia, Inc., McAfee, Inc., Microsoft Corporation, Parametric Technology Corporation, RSA, The Security Division of EMC, SAP AG, SolidWorks Corporation, Sybase, Inc., Symantec Corporation, and UGS Corporation.

STATEMENT

Amicus adopts the statement of the case presented in the Brief for Petitioner. For the Court's convenience,

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[1] Petitioner and Respondent have filed letters with the Court consenting to all amicus briefs. Consistent with Rule 37.6, this brief is not authored in whole or in part by counsel for any party. No person, other than amicus or their counsel, has made a monetary contribution to the preparation or submission of this brief. Petitioner is a member of the Business Software Alliance.

amicus highlights below a background on the law of patents and the development of computer software to provide the historical context to the present dispute.

Prior to the adoption of the Constitution, individual states had adopted different patent laws.[2] James Madison, seeing the shortcomings of potentially overlapping patent regimes, noted that states "cannot separately make effectual provision" for patents without uniform or supreme rules. *Fla. Prepaid Postsecondary Educ. Expense Bd.* v. *College Sav. Bank*, 527 U.S. 627, 650 (1999) (citing THE FEDERALIST 267 (H. Lodge ed. 1908)). The Patent Clause[3] reflects the balance between encouraging innovation in the new nation and avoiding monopolies that stifle competition. *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989). Acting on this Constitutional authority, Congress wrote the Patent Laws of 1790 and 1793 "to promote the progress of science and useful arts." *Motion Picture Patents Co.* v. *Univ. Film Mfg. Co.*, 243 U.S. 502, 510-11 (1917) (citing *Pennock* v. *Dialogue*, 2 Pet. 1 (1829)).

The history of software development is the paradigm of such progress of science. The full implications of the decision below are made plain by a brief description of how the patent law has evolved with respect to computer programs. The first computer was built in 1936, and the first commercial

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[2] Thomas Jefferson wrote that "Nobody wishes more than I do that ingenuity should receive a liberal encouragement." *Graham* v. *John Deere Co.*, 383 U.S. 1, 8 (1966) (citing LETTER TO OLIVER EVANS (May 1807), V THE WRITINGS OF THOMAS JEFFERSON 75-76 (H.A. Washington ed., Townsend MacConn 1887)). Although wary of monopolies, the Framers nevertheless sought to encourage innovation by granting limited exclusive use to, in the words of James Madison, "the authors of Books, and of useful inventions." *Eldred* v. *Ashcroft*, 537 U.S. 186, 246 (2003) (citing *Monopolies. Perpetuities. Corporations. Ecclesiastical Endowments*, in J. MADISON, WRITINGS 756 (J. Rakove ed. 1999)).

[3] "The Congress shall have Power . . . to promote the progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." U.S. CONST. art. 1, § 8.

computer in 1950. However, computers were not widely accessible until the development of the single-chip microprocessor. The microprocessor allowed for compact computers to be assembled relatively inexpensively. The Altair 8800, introduced in 1975, marked the transition from mainframe to personal computer, but was priced for a limited market. Then came the IBM personal computer, released in 1981, which democratized computing power and augured the information revolution. IBM Corp., The Birth of the IBM PC, http://www-03.ibm.com/ibm/history/exhibits/pc25/pc25_birth.html (last visited Dec. 13, 2006).

Computers, however, are simply processing machines and need instructions on what and how to process in order to be of functional use. Software provides those instructions. The earliest machines were hampered by software limitations; programmers could not develop software separate from the machine but instead had to penetrate the master processing unit itself. Before the personal computer, machines ran on several different combinations of microprocessors, and software could not be written for use on machines with all the different combinations. The personal computer led to the development of the Altair BASIC programming algorithms, the first product developed by Microsoft and the first widely distributed software. The booming market for personal computers led to the development of universally compatible software to make them run. *See generally* Bradford Smith & Susan Mann, *Innovation and Intellectual Property Protection in the Software Industry*, 71 U. CHI. L. REV. 241 (2004).

Software makes computers functional by providing instructions to computers to perform specific operations. Software developers create "source code" (computer language that is intelligible to humans) that is then converted into "object code"[4] (a series of binary "1's" and "0's") by compilers. *AT&T Corp.* v. *Microsoft Corp.*, No. 01 Civ.

[4] Object code consists of machine code – code directly executed by a computer's CPU – together with other information.

4872, 2004 U.S. Dist. LEXIS 3340, at *3 n.5 (S.D.N.Y. Mar. 5, 2004). The machine readable object code directs the computer to open or close circuits in specific sequences, creating electrical paths which result in the specified operation. *See Fantasy Sports Props., Inc.* v. *Sportslines.com, Inc.*, 287 F.3d 1108, 1118 (Fed. Cir. 2002); *see also* 17 U.S.C. § 101 (defining a "computer program" as a "set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result"); *WMS Gaming Inc.* v. *Int'l Game Tech.*, 184 F.3d 1339, 1348 n.3 (Fed. Cir. 1999). It is this "machine-readable object code" for the Windows operating system that is on Microsoft's golden master disks (Pet. App. 45a ¶ 4). Foreign "replicators," licensed by Microsoft, make copies of the object code and "ship those foreign manufactured copies" to manufacturers, who install the copies on computers (Pet. App. 45a ¶¶ 5, 6).

AT&T filed a patent infringement lawsuit alleging that certain of Microsoft's products infringed on AT&T's patent. The district court denied Microsoft's motion for partial summary judgment to exclude sales of goods incorporating foreign-replicated copies of infringing software. *AT&T*, 2004 U.S. Dist. LEXIS 3340. On review, the Court of Appeals for the Federal Circuit upheld the denial of the motion because (1) software may be considered a component of a patentable invention under Section 271(f), and (2) foreign-made copies of the software "may be deemed supplied" or have "essentially been supplied from the United States." *AT&T Corp.* v. *Microsoft Corp.*, 414 F.3d 1366, 1369-70 (Fed. Cir. 2005). Judge Rader dissented, saying that "copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying." *Id.* at 1373 (Rader, J., dissenting). Judge Rader further concluded that the "extraterritorial expansion of U.S. patent law contravenes the precedent of this court and the Supreme Court that expressly confines the rights conferred by Title 35 to the United States and its Territories." *Id.* (Rader, J., dissenting).

SUMMARY OF ARGUMENT

To appreciate the competitive, economic and legal import of the decision below, one need only to recognize that this dispute is not between a domestic inventor and a foreign infringer. Rather, it is between two inventors based in the United States. One inventor, the Petitioner, had shipped a copy of its invention overseas. The other inventor, the Respondent, could apply for and prosecute a foreign patent for its innovation. There is no United States liability for foreign actions, whether the invention is used or not.

The holding that the shipment of one golden master disk could lead to multiple acts of infringement, based on the software's replication abroad, subjects software companies to indefinite and unpredictable worldwide liability, irrespective of the companies' ability to control the overseas copying. This decision (1) necessarily changes the way United States software companies will do business, producing results contrary to the intent of United States patent laws, and (2) offends the plain meaning of the statute at issue and circumvents the prerogatives and duties of the Congress.

If allowed to stand, this unjustified and baseless extraterritorial application of United States patent laws – premised on a fundamental misreading of the law and a misunderstanding of the software technology at issue – will corrupt the Constitutional purpose of the patent law to promote the welfare through innovation within our national boundaries. The indefinite liability established by the lower court's opinion for inventive acts done in the United States, with no corresponding liability for foreign inventions, is likely to put at risk America's inventive genius for software innovation. At a minimum, the decision negatively impacts United States software companies' competitiveness with their foreign counterparts, who face no corresponding infringement liability. The risk of liability now faced by American companies, a risk not faced by their foreign competitors, will undoubtedly diminish any

competitive advantage currently enjoyed by those developers in the United States.

Protecting against this result is precisely the rationale behind the strong presumption against extraterritorial application of patent law, a longstanding legal principle. It is well settled that all legislation is presumed to apply only within the territorial jurisdiction of the United States unless the statute expressly provides otherwise, and this presumption is considerably amplified in the context of patent law where Congress is not only concerned with national conditions and international comity, but also with spurring domestic innovation.

The Federal Circuit's crafting of a "software is special" rule has no basis in the law of patents or the logic of business. The language utilized by the court below makes clear that the facts before it did not fit into the statute as written, and thus it had to opine such that the golden master disk was "*deemed* supplied" or the resulting copies had "*essentially* been supplied." *AT&T*, 414 F.3d at 1369-70 (emphasis added). With such judicial license the court ignored the long standing clear statement rule, the presumption against extraterritoriality and an implicit decision by Congress to close one particular "loophole" in the law, but to go no further. Moreover, the Federal Circuit's opinion all but ignored that there is no need for the extraterritorial application that it has given to the statute, for foreign patent law already provides a remedy and inventors may protect their innovations outside of the United States by applying for and enforcing patents in foreign jurisdictions.

In so doing, the lower court exceeded its proper role and rewrote Section 271(f) to apply in ways that Congress did not intend – to create a "software is special" rule, thus treating it differently from other patented material, and by making "copying" outside the territory of the United States equivalent to "supplying" from the United States. Where Congress has not directed that "supplying" is

to bear any other import than that accompanying its contemporary, common meaning, it is not the role of the judiciary to read other words or word meanings into the statute. *See Williams* v. *Taylor*, 529 U.S. 420, 431 (2000) (citing *Walters* v. *Metro. Educ. Enters., Inc.*, 519 U.S. 202, 207 (1997)).

Further, the lower court's finding of a "component" ignored the text and history of Section 271(f), which require that any "component" under its ambit be produced, or at least physically present, in the United States. Nothing in the facts before this Court indicates that anything that became a part of the final allegedly infringing product was ever present in the United States, other than the information contained on the golden master disk. But the Federal Circuit recognized that the term "component," as used in Section 271(g), a provision of law passed after Section 271(f), must refer only to "tangible objects and not intangibles such as information." *Bayer AG* v. *Housey Pharms., Inc.*, 340 F.3d 1367, 1372 (Fed. Cir. 2003).

Under a properly construed Section 271(f), to copy is not to supply, ethereal knowledge is not a component, and unlimited worldwide liability should not attach for a single act of shipping a golden master disk.

ARGUMENT

I. The Decision Below Threatens Domestic Innovation by United States Software Companies and Upends the Purpose of Patent Law.

The lower court's creation by judicial decree of liability that Congress did not intend will have a profound impact both on the companies now faced with potentially limitless exposure and on the United States economy as a whole. The Federal Circuit's decision, if allowed to stand, threatens the competitive viability of an industry that receives on average 50 percent of its revenues from foreign sales. This decision jeopardizes the ability of

United States based companies to compete with their foreign counterparts – competitors who are not subject to the reach of the Federal Circuit.

The lower court's opinion, while claiming faithfulness to the "object and policy" of the whole law, all but ignored the object and policy of the Patent Clause and of patent laws. The court strained the statutory text of Section 271(f) to apply the statute extraterritorially, to a set of circumstances for which it is not intended and contrary to general canons of statutory interpretation. In so doing, the Federal Circuit has pronounced a drastic change in the status quo – one which has significant adverse effects on an industry which, like many others, is highly responsive to legal rules.

A. The Decision Below Threatens Domestic Innovation by United States Software Companies.

The United States government describes the modern United States economy, in the 1990s and beyond, as one defined by the computer software industry: "If steel and shoes were no longer American manufacturing mainstays, computers and the software that make them run were." United States Department of State, Outline of the U.S. Economy, *available at* http://usinfo.state.gov/products/pubs/oecon/chap3.htm. In 2005, the software industry contributed $194 billion and the computer industry $85 billion to the nation's gross domestic product. U.S. Department of Commerce, Bureau of Economic Analysis, Gross Domestic Product and Related Measures: Level Change From Preceding Period, *available at* http://bea.gov/bea/newsrel/gdpnewsrelease.com. The software industry's contribution to the GDP reflected an increase from 2.1 percent of GDP in 2002 to 7.4 percent in 2005. U.S. Department of Commerce, Bureau of Economic Analysis, GDP by Industry, *available at* http://www.bea.gov/bea/dn2/home/annual_industry.htm.

A major part of these software and computer industry contributions derives from foreign exports. According to publicly filed annual reports for 2005, foreign sales typically represented 40 to 60 percent of total revenues for BSA member companies, with a high of 85 percent. And while the United States trade deficit reached record highs in 2000, the software industry generated a trade surplus of $20 billion that year. The Global Threat of Software Counterfeiting, Hearing Before the Subcomm. on Courts, the Internet, and Intellectual Property, 108th Cong. (testimony of Richard C. LaMagna, Senior Manager, Worldwide Anti-Piracy Investigations Law and Corporate Affairs, Microsoft Corporation (March 13, 2003)), *available at* http://www.microsoft.com/presspass/exec/lamagna/03-13-03lamagnatestimony.mspx. In the year 2000 alone the computer industry generated $800 billion in revenue worldwide, and this was projected to increase ten-fold in the next decade. Karen Wong, *Digital Imaging: E-Business Ecosystem Drives the Industry Forward*, ASIA COMPUTER WEEKLY, Oct. 20, 2000.

The risk of indefinite foreign liability imposed on United States companies for a single act of shipping the golden master disk – a risk that foreign software developers do not bear – may well offset any technological or product advantages United States companies enjoy over their foreign competitors. As the district court acknowledged, the interpretation given below to Section 271(f) has "profound ramifications" for the software and computer industry. *AT&T*, 2004 U.S. Dist. LEXIS 3340, at *2. Far from promoting the "object and policy" of patent law, the Federal Circuit's decision creates unforeseeable risk and unbounded liability for software and computer companies. Software and computer companies based in the United States rely on the strength of United States law both to protect innovation through the enforceability of patents, and also to promote innovation through the manufacturing and selling of their products without the improper assertion of patent rights. Until the Federal Circuit's expansive reading of Section 271(f), these two tenets coexisted harmoniously.

The Federal Circuit's decision drastically alters the status quo and jeopardizes future software advancements in the United States. At the very least, the decision creates a competitive disadvantage for United States software companies vis-à-vis their foreign counterparts. Absent a foreign patent, foreign competitors can make and use an invention patented in the United States without any infringement liability, and the United States product would be burdened with a royalty while foreign competitors are not. With 40 to 60 percent of their revenues derived from foreign exports, the costs to United States software companies attributable to the competitive disequilibrium created by the decision below is certainly substantial, if not catastrophic.

At the extreme, the decision below threatens to recalibrate the decisions of American companies on where they do their research and innovation by attaching substantial and unpredictable risk of liability to research done at home in the United States, while excluding from all such risks innovation done outside of United States territory. This is perversion of the very purpose of the patent law. By opening up the sluice gates to indefinite foreign liability for a single act of shipping a golden master disk from the United States, the decision below risks having companies decide that golden master disks will not be developed in and shipped from the United States.

Legal rules impact corporate decisions, incentives to innovate and American competitiveness. As but one example, consider the United States restrictions on the export of encryption software products of greater than 40-bit length during the 1990s. These restrictions that were far more stringent than those in foreign jurisdictions like the European Union, Canada, Ireland, and Finland, created a regulatory disadvantage that rendered United States companies unable to compete with foreign software companies. While the intent of the restrictions was to increase homeland security, they actually had the potential to create the exact opposite result. By driving expertise in encryption

development overseas, United States encryption technologies would be compromised.

> The most effective means of dealing with strong encryption is to utilize access to the best and brightest cryptographers and security experts in the world. Many such people now reside in America, but as we enable the competitiveness of our foreign rivals in the market for strong encryption, this expertise will gravitate elsewhere.

Encryption: Security in a High-Tech Era, Hearing Before the Subcomm. on Int'l Econ. Policy and Trade, House Comm. on Int'l Relations, 106th Cong. (testimony of Edward J. Black, President and CEO, Computer & Communications Industry Association (May 18, 1999)).

The substantial impact on industry and the economy is but one reason why a new legal rule as dramatic as that adopted by the court below should be effected not by judicial fiat but by the institution best suited to weigh the ramifications of a potential change – Congress.

B. The Purpose of Patent Protection Is To Encourage Domestic Innovation, Not To Drive it Overseas.

From their inception, patent rights have represented a "privilege which is conditioned by a public purpose." *Mercoid Corp.* v. *Mid-Continent Inv. Co.*, 320 U.S. 661, 666 (1944). Thomas Jefferson opined that the patent law is about "drawing a line between the things which are worth to the public the embarrassment of an exclusive patent and those which are not." *Bonito Boats, Inc.* v. *Thunder Craft Boats, Inc.*, 489 U.S. 141, 148 (1989) (citing 13 WRITINGS OF THOMAS JEFFERSON 335 (Memorial ed. 1904)). Early cases expounded on this notion that the objective of the patent laws was to develop the "genius and industry of the country." *Brown* v. *Duchesne*, 60 U.S. (19 How.) 183, 187 (1856).

The lower court's decision perverts the purpose of Article I, Section 8, to promote our nation's economic

welfare through innovation. It establishes an irresponsible rule that punishes software inventors for expending their energies at home in pursuit of novel technologies by subjecting those same inventors to heretofore unanticipated and henceforth unforeseeable worldwide liability. The corruption of the Constitutional purpose is exacerbated by the lower court's ruling that innovation done outside our national borders is free of such limitless risk and liability. The decision upsets the industry standard so significantly that it poses the very real risk that companies will no longer be willing or able to develop products within the United States. Such relocation of software development to other countries directly contradicts the historical and constitutional purpose of the patent law regime.

Protecting against this result is precisely the rationale behind the presumption against extraterritorial application of United States laws. It is a general canon of construction that congressional enactments are meant to apply only in the United States unless a contrary intent is evident. *See, e.g.*, *Foley Bros.* v. *Filardo*, 336 U.S. 281, 285 (1949) ("[L]egislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States . . . based on the assumption that Congress is primarily concerned with domestic conditions." (internal citation omitted)).

Concern for jurisdictional comity informs the presumption against extraterritoriality. This Court "ordinarily construes ambiguous statutes to avoid unreasonable interference with the sovereign authority of other nations . . . this rule of construction reflects principles of customary international law." *F. Hoffman-La Roche Ltd.* v. *Empagran S.A.*, 542 U.S. 155, 164 (2004) (internal citations omitted). Further, the extraterritorial application of United States laws poses the risk that United States law may conflict with foreign laws and thereby subject primary actors to conflicting legal obligations. *See E.E.O.C.* v. *Arabian Am. Oil Co. (Aramco)*, 499 U.S. 244, 248 (1991).

This presumption against extraterritorial application of the law is exponentially stronger in the patent context, where Congress is presumed to be concerned not only with domestic conditions and international comity, but additionally with spurring domestic innovation. The domestic scope of patent laws is evident from the earliest cases. "The power thus granted is domestic in its character, and necessarily confined within the limits of the United States . . . and the use of [the patentee's rights] outside of the jurisdiction of the United States is not an infringement of his rights." *Brown*, 60 U.S. at 195. *See also Dowagiac Mfg. Co.* v. *Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915). Even more recently, this Court has stated that "the Congress in the exercise of the patent power may not overreach the restraints imposed by the stated constitutional purpose." *Graham* v. *John Deere Co.*, 383 U.S. 1, 6 (1966). Thus, the presumption against extraterritorial application of United States statutes is particularly robust in the context of patent law.

To rebut this presumption, a statute must contain a "clear statement," explicitly specifying that it is intended to operate extraterritorially. "In this delicate field of international relations there must be present the affirmative intention of the Congress clearly expressed." *McCulloch* v. *Sociedad Nacional de Marineros de Honduras*, 372 U.S. 10, 21-22 (1963). *See also Aramco*, 499 U.S. at 248 ("It is a longstanding principle of American law that legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States.") (internal citations omitted). In other contexts, this Court has adopted rules regarding what constitutes a "clear statement" from Congress about its intentions. *See, e.g.*, *Gregory* v. *Ashcroft*, 501 U.S. 452, 467 (1991) ("We will not read the ADEA to cover state judges unless Congress has made it clear that judges are *included* . . . it must be plain to anyone reading the Act that it covers judges." (internal citation omitted) (emphasis in original)); *Atascadero State Hosp.* v. *Scanlon*, 473 U.S. 234, 242 (1985) ("Congress may abrogate the States' constitutionally

secured immunity from suit in federal court only by making its intention unmistakably clear in the language of the statute."); *Nixon* v. *Missouri Mun. League*, 541 U.S. 125 (2004). Absent such a clear statement, no United States law should be read to apply extraterritorially.

Congress enacted Section 271(f) in response to *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972). The Court in *Deepsouth* held that assembling components of a patented product overseas was not an infringement because "our patent system makes no claim to extraterritorial effect; 'these acts of Congress do not, and were not intended to, operate beyond the limits of the United States.'" *Id.* at 531 (internal citation omitted). The drafters of Section 271(f) explained that the proposed Section 271(f) "will prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to the United States Supreme Court decision in *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972), concerning the need for a legislative solution to close a loophole in patent law." *Section by Section Analysis: Patent Law Amendments of 1984*, 130 CONG. REC. H. 10525 (Oct. 1, 1984), *available at* 1984 U.S.C.C.A.N. 5827, 5828, 1984 WL 37541 (Leg. Hist.).

Congress thus aimed to close the loophole identified by *Deepsouth* – to attach liability where components were all manufactured within the United States but then shipped abroad for final assembly of the infringing product. But the enactment of Section 271(f) was addressed to the evasion identified by *Deepsouth*, and does not in any way expand the extraterritorial scope of the patent law to the facts of this case.

> Congress later amended the patent laws to change the specific holding of *Deepsouth* so that a person cannot avoid liability for infringement simply by shipping the parts of an invention from the United States for assembly abroad. This

> change, however, did not disturb the basic premise of *Deepsouth* that the patent laws of the United States do not have an exterritorial effect unless there is a clear signal from Congress that they should. The amended law was merely this "clear and certain signal."

Nicholas Oros, *Infringement Twice Removed: Inducement of Patent Infringement for Overseas Manufacture of Infringing Products Imported by Another*, 10 COMPUTER L. REV. & TECH. J. 163, 175 (2006).

The fundamental error below is that the Federal Circuit took the clear statement provided by Section 271(f) beyond its intended limits. "Nothing in §271(f) or its enacting documents expresses an intent to attach liability to manufacturing occurring wholly abroad." *AT&T*, 414 F.3d at 1375 (Rader, J., dissenting). Yes, Section 271(f) provided a sufficiently clear statement to attach liability for the foreign assembly of domestically manufactured parts. But beyond the limits of that clear statement, the presumption against extraterritoriality holds – and indeed holds with the additional force of the maxim *expressio unius est exclusio alterius*. *See Chevron U.S.A. Inc.* v. *Echazabal*, 536 U.S. 73, 80 (2002).

As the Court explained in declining to apply the Federal Torts Claims Act extraterritorially:

> The applicability of the presumption is not defeated here just because the FTCA specifically addresses the issue of extraterritorial application in the foreign-country exception. To the contrary, as we stated in *United States* v. *Spelar*, 338 U.S. 217, 222 (1949), "that presumption, far from being overcome here, is doubly fortified by the language of this statute and the legislative purpose underlying it." Petitioner does not assert, nor could she, that there is clear evidence of congressional intent to apply the FTCA to claims arising in Antarctica.

Smith v. *United States*, 507 U.S. 197, 204 (1993).

Just so here. The majority opinion below all but acknowledged that Section 271(f) on its face does not extend to the facts of this case when it held that the golden master disk was "*deemed* supplied" or that the resulting copies had "*essentially* been supplied." *AT&T*, 414 F.3d at 1369-70 (emphasis added). Whatever merit such judicial liberty with statutory text may hold in other contexts, it simply has none where, as here, the text must be interpreted in light of a long standing clear statement rule, a presumption against extraterritoriality and an implicit congressional decision not to go further when it enacted Section 271(f).

Quite independently, the interpretive leap below transgresses another canon of statutory construction: "An act of Congress ought never to be construed to violate the law of nations if any other possible construction remains." *Murray* v. *Charming Betsy*, 6 U.S. (2 Cranch) 64, 118 (1804). *See also Hartford Fire Ins. Co.* v. *California*, 509 U.S. 764, 814-15 (1993) (Scalia, J., dissenting) (citing *Aramco*, 499 U.S. at 264 (Marshall, J., dissenting)). "[T]his Court ordinarily construes ambiguous statutes to avoid unreasonable interference with the sovereign authority of other nations." *Empagran*, 542 U.S. at 164 (citing *McCulloch* v. *Sociedad Nacional de Marineros de Honduras*, 372 U.S. 10, 20-22 (1963); *Romero* v. *Int'l Terminal Operating Co.*, 358 U.S. 354, 382-83 (1959); *Lauritzen* v. *Larsen*, 345 U.S. 571, 578 (1953)). As the Court recently explained, "This rule of statutory construction cautions courts to assume that legislators take account of the legitimate sovereign interests of other nations when they write American laws. It thereby helps the potentially conflicting laws of different nations work together in harmony – a harmony particularly needed in today's highly interdependent commercial world." *Empagran*, 542 U.S. at 164-65.

There is little doubt that the decision below implicates the Nation's interests in "a harmony particularly needed in today's highly interdependent commercial world." The

United States government so states in this very litigation. Even where the United States urges the contravention of the law of nations and international comity, "[w]hen construing a statute with potential foreign policy implications, we must presume that the President has evaluated the foreign policy consequences of such an exercise of United States law and determined that it serves the interests of the United States." *United States* v. *Corey*, 232 F.3d 1166, 1179 n.9 (9th Cir. 2000). A fortiori, the United States position in this case that the Court should follow international norms and respect international comity carries special, if not dispositive, weight. *See Empagran*, 542 U.S. at 165.

The Federal Circuit's interpretive transgression creates yet another potential consequence – that other countries will expand the reach of their own patent laws to include purely foreign actions, thereby subjecting American companies to liability abroad for actions that occur within the United States. The presumption against the extraterritorial application of United States statutes sets a precedent for the scope and interpretation of other countries' laws with respect to American citizens and companies. This approach acknowledges "the legitimate sovereign interest of other nations. . . . It thereby helps the potentially conflicting laws of different nations work together in harmony. . . ." *Empagran*, 542 U.S. at 164. The decision below throws this balance into turmoil by prescribing overlapping and potentially conflicting patent protection and by opening the possibility of extraterritorial application of foreign patent law to United States conduct.

The Federal Circuit fails to acknowledge that foreign patent law already provides a remedy. Essentially ignored in the lower court's decision is the fact that United States inventors may protect their innovations from foreign infringement by applying for and enforcing patents in foreign jurisdictions. As Judge Rader correctly asserts in dissent, "while copying in Dusseldorf or Tokyo may indeed constitute infringement, that infringement must find its

remedy under German or Japanese law." *AT&T*, 414 F.3d at 1371. Such a remedy would square with principles of international comity and afford all interested parties – the inventor, the software developer, the home country and the foreign jurisdiction – the protection of an orderly and predictable transnational patent regime.

II. The "Software Is Special" Jurisprudence Created by the Federal Circuit Offends the Text and Purpose of 35 U.S.C. § 271(f).

There is little question that the decision below expands Section 271(f) beyond its intended reach and normal reading. That much is evident from the panel's own statements in the opinion. The court below, apparently, thought it could take such liberties because it needed to account for "realities of software distribution" and "cannot disregard the nature of the relevant technology and business practices underlying a particular litigation." *AT&T*, 414 F.3d at 1370. The meaning of text should not change, the canons of interpretation should not vary, and the patent law should not be special just for software.

Absent the "software is special" lens adopted by the panel decision, Section 271(f) simply does not reach the conduct at issue in this case. Congress used the word "supply" deliberately, and its meaning is distinct from any possible act of copying or replication. Moreover, the reach of 271(f), predicated on the limited Congressional intent to overturn *Deepsouth*, extends only to physical components and not to abstract instructions such as software object code. Deprived of textual and logical support for its reading, the panel decision relies on an old saw: "A literal reading of which would lead to absurd results is to be avoided." *Haggar Co.* v. *Helvering*, 308 U.S. 389, 394 (1940). But this limited exception to textual fealty simply does not stretch to support the panel's proposition that "an interpretation that allows liability to attach only when a party acts in an unrealistic manner is unlikely to be correct." *AT&T*, 414 F.3d at 1369-70.

A. Software Should Not Be Singled Out for Special Treatment.

The panel below abused the text of Section 271(f) in its attempt to divine special meaning of the terms "supply" and "component" for particular application to computer software. Software and computers have allowed people worldwide to interact and conduct their business more efficiently, but they have not changed the meaning of the words "supply" and "component" nor Congress's intent in using them. To divine a software penalty under Section 271(f) is contrary to the proper role of the courts. "As interpreter of the Congressional Acts that have expressed the patent policy of this nation since its beginning this Court is entrusted with the protection of that policy against intrusions upon it." *United States* v. *Line Material Co.*, 333 U.S. 287, 332 (1948).

The Federal Circuit exceeded this role by rewriting in two ways Section 271(f) without regard to a plain reading of the law or any indication of Congressional intent: first, by declaring that software is to be treated differently from other patented material, including other intellectual property; and second, by making "copying" outside the territory of the United States equivalent to "supplying" from the United States. The Federal Circuit's straining of the statutory text for special application to software is particularly problematic in light of the fact that Congress knew about software and other forms of non-physical intellectual property when it enacted Section 271(f). It was Congress that chose not to distinguish between software-related inventions and other patentable inventions. Courts should not rewrite from the bench what Congress did not from the Capitol.

The Federal Circuit decided that Section 271(f) should be interpreted "in a manner that is appropriate to the nature of the technology at issue," *AT&T*, 414 F.3d at 1371. This pronouncement and its contorted application to reach the result below offends the traditional rule that the patent law accords "the same treatment to all forms of

invention." *Eolas Techs. Inc.* v. *Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005) (citing TRIPS Agreement, Part II, Section 5 (1994) ("Patents shall be available and patent rights enjoyable without discrimination as to the place of invention[] [and] the field of technology. . . .") (alteration in original)).

The lower court's decision flouts the example the Court set in *Deepsouth*. The Court in *Deepsouth* fulfilled its proper role to "[construe] the language Congress has employed," *Diamond* v. *Chakrabarty*, 447 U.S. 303, 315 (1980), by holding that it "should not expand patent rights by overruling or modifying prior cases construing the patent statutes, unless the argument for expansion of privilege is based on more than mere inference from ambiguous statutory language." *Deepsouth*, 406 U.S. at 531. In so doing, the Court decided the case based upon the current law – allowing a "loophole" in the statutory text to stand – and left it to Congress to respond with a "clear and certain signal," *id.*, of its intent. In accordance with its proper function as the lawmaking body of the nation, Congress responded to this "loophole," by enacting Section 271(f). If, as the court below surmises, there is a software loophole in 271(f), it is for Congress to close, not the judiciary.

Congress could have re-written Section 271(f) to make a clear statement about the applicability of the statute in the software context. Yet, neither the plain language of the statute nor legislative history specify that software – or any particular patentable subject matter – should receive special treatment under Section 271(f). When Congress intends for products to receive disparate treatment under patent law, it so specifies in the statutory text. For example, in Section 271(g), enacted after Section 271(f), Congress explicitly distinguished between different types of patents by providing for specific treatment of process patents. *See* 35 U.S.C. § 271(g) (2000). This express language singling out process patents for protection in Section 271(g) indicates that "Congress knew how to

protect against foreign use of process patents, and chose to limit such protection to uses which result in the introduction of products into the United States." *ENPAT, Inc.* v. *Microsoft Corp.*, 6 F. Supp. 2d 537, 539 (E.D. Va. 1998). Similarly, Congress knew (and indeed, still knows) about the existence of software when enacting Section 271(f), and could have chosen to extend Section 271(f) to include the copying of software. If Congress had intended for any type of patentable material, including software, to be treated differently under Section 271(f), it would have said so explicitly. *See ENPAT*, 6 F. Supp. 2d at 539 ("Clearly, had Congress intended to prohibit U.S. companies from exporting products which allow foreign companies to make unauthorized use of patented methods, it could have done so in clear, unambiguous language like that found in § 271(g).").

It is not the province of the court to construe patent law to apply differently to different types of patentable subject matter. *See Brown* v. *Duchesne*, 60 U.S. (19 How.) 183 at 196-97 (1856) (holding that the judiciary should not construe laws to reach cases "which Congress evidently could not have contemplated, without departing from the principle upon which they were legislating, and going far beyond the object they intended to accomplish"). The case is even stronger here, where software was not an "unanticipated invention," but rather one of which Congress was and continues to be acutely aware. As such, the Court is confined to applying the statutory text of Section 271(f) in a consistent manner, whether to software or other products. *See Chakrabarty*, 447 U.S. at 315-16.

Indeed, after *Eolas Technologies Inc.* v. *Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), signaled the "software is special" jurisprudence of the decision below, Congress became keenly aware of the interpretive transgression and actively considered curative action. S. 3818 proposed outright repeal of Section 271(f), and H.R. 2795 proposed to change Section 271(f) as follows: "Section 271(f) of title 35, United States Code, is amended by

adding at the end the following: '(3) An item supplied in or from the United States is not a "component" under this section unless the item is a tangible item that is itself combined physically with other components to create the combination that is alleged to infringe.'" S. 3818, 109th Cong. § 5 (2006), H.R. 2795, 109th Cong. § 5 (2005). Both of these proposals evince a desire to ensure that software is on the same footing as other patentable material, and that it should receive neither increased scrutiny nor added protections, a proposition that this amicus strongly supports. Congress decided that it could not "take a position on this proposal without further study." Staff of H. Comm. On the Judiciary, 109th Cong., Patent Act of 2005 (Comm. Print 2005). Until Congress decides to act or to express clearly its intention to expand the scope of Section 271(f), the courts are constrained to interpret Section 271(f) in its current form and not on a form that they preferred Congress to have adopted.

B. To Copy Is Not To Supply

Liability under Section 271(f) does not attach for the simple fact that neither the software object code nor the Windows program at issue was "supplied" from the United States. Section 271(f) proscribes "suppl[ying] or caus[ing] to be supplied" components of a patented invention to be combined overseas. *See* 35 U.S.C. § 271(f) (2000). Although the multitude of software codes installed on computers overseas are not supplied from the United States, the court nevertheless ascribed liability because it thought those installed codes are "copied" in a way that can be "subsumed" in the term "supplied." *AT&T*, 414 F.3d at 1370.

Leaving aside the incredible weight the court below hoisted on the shoulders of the one word "subsumed," its analysis misses one key analytical step. What is supplied from the United States is the software code, contained on the golden master disk, Pet. App. 47A ¶ 10, akin to instructions or blueprints. The golden master disks are not

simply "copied" abroad. Instead, physical duplicates of the golden master disks are manufactured in foreign factories. While software perhaps can be copied more easily than other products, this duplication still entails a physical process that happens much the way any other commodity would be manufactured abroad: via factories, machines and workers. The physical manufacturing process cannot be ignored. The lower court ignores this step when it conflates copying and supplying to achieve a result that is not intended by Section 271(f) – the proscription of behavior that is permissible under patent law generally and Section 271(f) specifically.

Even ignoring the physical replication process prior to assembly with the computer hardware, "[t]he act of supplying is separate and distinct from copying, reproducing, or manufacturing," and "one act of 'supplying' cannot give rise to liability for multiple acts of copying." *AT&T*, 414 F.3d at 1373 (Rader, J., dissenting). The proper function of the judiciary is to interpret statutes as they are written – starting with the language of the statute. *See, e.g.*, *Williams* v. *Taylor*, 529 U.S. 420, 431 (2000); *see also Parker* v. *Flook*, 437 U.S. 584, 596 (1978). Unless a statute contains particularized definitions of the words used therein, "words will be interpreted as taking their ordinary, contemporary common meaning." *Chakrabarty*, 447 U.S. at 308 (quoting *Perrin* v. *United States*, 444 U.S. 37, 42 (1979)). Section 271(f) contains no specific definitions of "supplying," either in the statute itself or in the legislative history. Thus Congress has not directed that "supplying" is to bear any other import than that accompanying its contemporary, common meaning. It is not within the province of the Court to read other words or word meanings into the statute when they have not been specifically provided by Congress. *See Williams*, 529 U.S. at 431 (citing *Walters* v. *Metro. Educ. Enters., Inc.*, 519 U.S. 202, 207 (1997)).

A simple analogy illustrates the fallacy in the lower court's reading. Suppose that, instead of the manufacture of computer object code, this case involved the manufacture of

a computer spacebar key. If a single infringing spacebar key were manufactured in the United States, exported, and installed on a foreign computer, liability could attach to that computer under Section 271(f). But if the infringing exported spacebar key were used as a model for foreign-manufacture of duplicate spacebar keys, there could be no liability under Section 271(f) because the foreign-manufactured spacebar keys were not "supplie[d] . . . from the United States." 35 U.S.C. § 271(f)(1). The United States manufacturer of the spacebar key could even send the foreign manufacturer instructions detailing the proper way to manufacture the spacebar key without being subject to liability under Section 271(f). *See Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113, 1117-18 (Fed. Cir. 2004). The decision below imposes liability for foreign-manufactured software in legally indistinguishable circumstances.

The lower court's own language betrays a recognition that it is reading into the law something that simply is not there. The Federal Circuit notes that the infringing component is "*deemed* supplied," *AT&T*, 414 F.3d at 1369 (emphasis added), and that "[a]ll of such resulting copies have *essentially* been supplied," *id.* at 1370 (emphasis added), to try to squeeze the act of copying into that of supplying.

If ambiguity appears when interpreting a statute, the court should look to its legislative history and statutory purpose in order to determine congressional intent. *See Chakrabarty*, 447 U.S. at 315; *see also Parker*, 437 U.S. at 596; *Brown*, 60 U.S. at 196-97. But the statute here provides no ambiguity. Indeed, the legislative history of the statute and the congressional purpose for passing the statute further reinforce that only the act of supplying – not copying – is proscribed by Section 271(f). Congress enacted Section 271(f) in response to *Deepsouth* in order to close the particular loophole that the case exposed: the statute, in its pre-*Deepsouth* iteration, technically permitted components of a patented product to be shipped

overseas for assembly. Congress intended to prevent companies "from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad." *Section by Section Analysis: Patent Law Amendments of 1984*, 130 CONG. REC. 28069 (Oct. 1, 1984), *available at* 1984 U.S.C.C.A.N. 5827, 5828, 1984 WL 37541. This legislative history confirms that it is only the *supplying* of components which Section 271(f) forbids – companies still may copy such components overseas to create the patented product without being subject to any liability under Section 271(f). Nothing contained in the legislative history suggests a different interpretation.

Indeed, the congressional history further establishes that Congress intended to address "the need for a legislative solution to close *a loophole* in patent law," *id.*, and the Court should not mistake the intention to close a particular loophole with a desire to apply the statute to the facts before it. Congress's rectification of the *Deepsouth* loophole also demonstrates that the legislature will not rely on courts to effectuate changes in the law. Thus, the interpretive position that AT&T and the lower court impress upon Section 271(f) should be addressed to Congress, not to the courts, because the courts may not read limitations and conditions into patent law that have not been clearly expressed by the legislature. *See Chakrabarty*, 447 U.S. at 317; *Gottschalk* v. *Benson*, 409 U.S. 63, 73 (1972).

The lower court's attempt to justify its decision by claiming that it must hold Microsoft liable to prevent a "technical avoidance" of the statute, *AT&T*, 414 F.3d at 1371, is unavailing. Despite the obvious difference between the terms "supply" and "copy," the lower court refused to recognize their divergence: "[w]ere we to hold that Microsoft's supply by exportation of the master versions of the Windows® software – specifically for the purpose of foreign replication – avoids infringement, we would be subverting the remedial nature of § 271(f),

permitting a technical avoidance of the statute. . . ." *Id.* Thus, to prevent this "technical avoidance," the lower court held Microsoft liable for copying – not supplying – software. However, there is no interpretive exception to proper judicial statutory construction for "technical avoidance of the statute."

This exception to statutory interpretation adopted by the lower court would transform the narrow "absurd results" exception that this Court has articulated into an interpretive black hole that swallows the textual rule. It is the function of the courts to interpret and apply the law as it appears, not to create the law by misconstruing statutory language for their own purposes. To be sure, the courts do have some discretion to reject statutory interpretations which produce "absurd results," but this discretion is quite narrow and applies only where a literal reading would result in "absurd results or would thwart the obvious purpose of the statute." *Helvering* v. *Hammel*, 311 U.S. 504, 510-11 (1941). Although, once enacted, statutes may sometimes lead to "mischievous, absurd or otherwise objectionable" results, the proper remedy lies with Congress, not the courts. *Crooks* v. *Harrelson*, 282 U.S. 55, 60 (1930). Were the courts to take free license to widen or narrow the scope of statutory text at their discretion, statutes would be rendered meaningless. In accordance with proper judicial restraint, the Court has qualified the "absurd results test" by stating that it "rarely invokes such a test to override unambiguous legislation." *Barnhart* v. *Sigmon Coal Co., Inc.*, 534 U.S. 437, 459 (2002). In the instant case, a literal reading of Section 271(f) does not create absurd results, but instead creates uniform results that apply consistently for software as they do for other patentable products. Further, a literal reading does not "thwart the obvious purpose of the statute" since that purpose, as discussed *supra* at Part I.B, was to address the particular loophole at issue in *Deepsouth*. Since there is nothing implausible about Section 271(f) applying only to the supplying of components overseas, and not the copying, the court "cannot escape this unambiguous statutory

command by proclaiming it would produce an absurd result." *Koons Buick Pontiac GMC, Inc.* v. *Nigh*, 543 U.S. 50, 65 (2002) (Stevens, J., concurring).

The act of copying, as a separate and distinct act from the act of supplying, is not proscribed by Section 271(f). The statute does not state nor did Congress intend that patented items be banned from being copied overseas. As such, the lower court erred when it held Microsoft liable for copying software overseas.

C. The Software Object Code at Issue Is Not a "Component" Under Section 271(f).

Separately, liability does not attach because neither the golden master disk shipped abroad, nor the software object code within it, can constitute a "component" under Section 271(f).

The text and history of Section 271(f) demonstrate that the term "component" contemplates a United States-manufactured physical product, the original of which when combined (in a way that meets the threshold of 271(f)) in a foreign-assembled invention infringes on a U.S. patent. In *Bayer AG* v. *Housey Pharmaceuticals, Inc.*, 340 F.3d 1367 (Fed. Cir. 2003), the Federal Circuit recognized that the term "component," as used in Section 271(g), must "refer[ ] to *tangible objects and not intangibles* such as information. Thus, the production of information is not within the scope of processes of 'manufacture.'" *Id.* at 1372 (emphasis added). The term "component" under Section 271(f) should be given its textual meaning – "tangible objects and not intangibles" – the same meaning the term is given under Section 271(g).

The text and history of Section 271(f) also indicate that the section requires any "component" under its ambit to be produced, or at least physically present, in the United States. The only thing that was ever present in the

United States that eventually became a part of the final allegedly infringing product was the information contained on the golden master disk. Even the lower court, with the liberties it has taken with the statutory text, could not stretch the information contained on the disk to be a tangible object.

Furthermore, if the component is considered to be the physical manifestation of that information – the golden master disk – Section 271(f) still cannot apply because of the further requirement that the component be exported in a manner to induce a "combination of such components outside of the United States." Nothing that was ever physically present in the United States was ever combined with anything else "in a manner that would infringe the patent." The Federal Circuit stated in *Pellegrini* that Section 271(f) is "clear on its face" and applies "only where components of a patent invention are *physically present* in the United States and then either sold or exported 'in such a manner as to actively induce the combination of *such components* outside the United States in a manner that would infringe the patent if such combination occurred within the United States.'" 375 F.3d at 1117 (internal citation omitted) (emphasis added).

In this case, nothing produced in the United States was ever installed on foreign-manufactured computers. Only the golden master disk was shipped out of the United States, and this disk was only duplicated on foreign machines – not placed in foreign-manufactured computers to create the alleged final infringing product. As applied to this case, Section 271(f)'s "component" requirement can only properly refer to a foreign-made copy of the golden master disk installed onto a particular foreign-manufactured computer. Since foreign-manufactured duplicates are not covered by United States patent laws or the text of Section 271(f), such a duplicate cannot be a "component" under Section 271(f).

The panel below ignores the duplication steps involved, rationalizing that foreign manufacturing of duplicates of the Microsoft golden master disks is less than an arduous process. "It is inherent in the nature of software that one can supply only a single disk that may be replicated – saving material, shipping, and storage costs – instead of supplying a separate disk for each copy of the software to be sold abroad." *AT&T*, 414 F.3d at 1370. The ease of manufacturing should be irrelevant for purposes of extraterritorial application of United States patent law. Many components of patented inventions are easy to duplicate. Extending liability to foreign-manufactured duplicates whenever a court finds that a company has "taken full advantage of the replicable nature" of the product, *id.* at 1370, is untenable.

The panel below extends Section 271(f) to cover not only combinations of United States-manufactured components of a patented invention not assembled within the United States, but also to combinations of material not even manufactured within the United States. Such judicial extension of Section 271(f), unsupported by the text or history of the statute, and indeed contrary to long-settled notions of statutory interpretation, should not be allowed to stand.

CONCLUSION

For the foregoing reasons, the decision below should be reversed.

Respectfully submitted,

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* ELI LILLY AND COMPANY IN SUPPORT OF PETITIONER

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QUESTIONS PRESENTED

35 U.S.C. § 271(f)(1) provides that it is an act of patent infringement to "suppl[y]. . . from the United States . . . components of a patented invention . . . in such manner as to actively induce the combination of such components outside of the United States." In this case, AT&T Corp (AT&T) alleges that when Microsoft Corporation's (Microsoft's) Windows operating system is installed on a personal computer, the computer with the installed operating system represents "the combination of such components" so as to infringe AT&T's patent purporting to claim a "Digital Speech Coder" system. AT&T sought damages not only for each Windows-based computer made or sold in the United States, but also, under section 271(f)(1), for each computer made and sold abroad. Microsoft infringed under section 271(f)(1), it is alleged, when it supplied outside the United States its Windows software code to foreign computer manufacturers who then installed the code on foreign-manufactured computers that were sold only to foreign consumers. The two questions arising in this appeal can be represented as follows:

(1) Whether software code that is recognized by a digital computing machine and directs its functioning – such code by itself being nothing more than an intangible sequence of binary values, commonly expressed as sequence of 1's and 0's – can qualify as a "component" of a patented invention within the meaning of section 271(f); and, if so,

(2) Whether the required duplication outside the United States of the coding sequence, in order for it to be used in a foreign country to operate computing machines, qualifies the duplicated sequence as having been "supplie[d] . . . from the United States?"

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I. INTEREST OF *AMICUS CURIAE* [1]

Amicus curiae Eli Lilly and Company ("*Amicus*") is a research-based pharmaceutical company. *Amicus* discovers and develops innovative medicines. Its innovations aim at enabling patients to live longer, healthier, and more active lives. To support its business, *Amicus* invests billions of dollars annually in research and development. An effectively functioning patent system is critical to its ability to make R&D investments in discovering new medicines and establishing their safety and effectiveness for human use.

Amicus' dependence on the patent system renders the integrity of the patent system of manifest importance to its survival. Its business model is threatened, therefore, by judicial decisions in patent cases that produce anomalous results, create substantial clouds of uncertainty over the reach of the patent laws, or fail to reflect the proper balance in the patent laws between strong incentives to innovate and rigorous application of the limitations that Congress placed on patent protection.

Permitting the patent laws to overreach their congressionally mandated boundaries undermines confidence in the patent system and respect for patents and patenting. This disrespect operates to the detriment of *Amicus* and others dependent upon respect for valid patent rights for their economic survival.

Amicus has no financial interest in the parties to this litigation or in the outcome of this specific case. Its interest

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[1] This brief was not authored, in whole or in part, by counsel for either party. No person or entity other than *amicus curiae* and its counsel made a monetary contribution to the preparation or submission of this brief. *Amicus* contacted both parties to obtain consent. Both parties referred *amicus* to their respective global consent letters, which have been lodged with the Clerk of the Court.

is that the patent laws be interpreted to protect innovation to the fullest possible extent, consistent with the rigorous conditions and requirements for patenting Congress has imposed.

II. INTRODUCTION

This case is symptomatic of how profoundly the law of patenting inventions can go astray if rigor is not present in the application of the conditions and requirements for patenting. The courts below have overreached in determining those acts that infringe a patent. While perhaps not self-evident from the record below, this overreaching is a byproduct of the failure of the courts below to rigorously apply the prime statutory requirement for patenting – that every claimed invention in a patent must be limited to patent-eligible subject matter. This Court had the opportunity recently to address the issue of "subject matter eligibility" for patenting in *Laboratory Corp. of America Holdings*, but dismissed *certiorari* as having been improvidently granted. *Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S. Ct. 2921 (2006).

Given the overarching importance of the provisions in the patent statute relating to subject matter eligibility for patenting, this Court should decide this appeal by addressing fully the rationale of the Court of Appeals for the Federal Circuit in its decision below, including its foundational reliance on its own prior jurisprudence as to what subject matter is eligible for patenting.

III. ARGUMENT

A. The Federal Circuit's Conclusion That Software Necessarily Qualifies as a Component of a Patented Combination is Based on Faulty Jurisprudential Foundations That Clearly Conflict with Section 101 of Title 35.

1. Section 101 Limits Patent Eligible Subject Matter to Tangible and Physical Products and Processes.

The requirement for "subject matter eligibility" for patenting is principally set forth in 35 U.S.C. § 101:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Thus, to be eligible for patenting, an invention or discovery that is claimed in a patent must fall squarely within one of four categories of subject matter. If a claimed invention cannot be characterized and set forth with definiteness as a (1) process, (2) machine, (3) manufacture, or (4) composition of matter, then the subject matter of the claim is not eligible for patenting.

Machines, manufactures, and compositions of matter are clearly tangible, physical things. Similarly, patent-eligible processes have historically been defined as consisting of one or more tangible, physical steps, rather than intangible or mental ones. This Court has so interpreted the term "process" as it is used in the patent statute:

> A process is a mode of treatment of certain materials to produce a given result. It is an *act*, or a series of *acts*, performed upon the subject matter to be transformed and reduced to a different state or thing.

Cochrane v. Deener, 94 U.S. 780, 788 (1877) (emphases added).

One of the most learned 19th century commentators on the patent law was equally explicit that an "art" or "process" was a sequence of acts undertaken on physical or tangible subject matter:

> An art or operation is an act or a series of acts performed by some physical agent upon some physical object, and producing in such object some change either of character or of condition. It is also called a 'process,' . . . .

William C. Robinson, *The Law of Patents for Useful Inventions*, § 159 (1890). Patent law has consistently used the terms "process" and "art" interchangeably.[2]

The requirements for physicality and tangibility of what is being claimed, even if claimed as a "process," have been part of the patent statute from the very beginning of the U.S. law on patenting. In the 1790 Patent Act, Congress used different words to limit subject matter eligible for patenting with precisely the same effect as in today's section 101. Under the 1790 patent law, patents were to be available only for an "art, manufacture, engine, machine, or device, or any improvement therein." Act of Apr. 10, 1790, ch. 7, § 1, 1 Stat. 109.

The 1793 Patent Act shortened the statutory listing to "art, machine, manufacture or composition of matter," a formulation that – with the clarifying definition of the term "process" in 35 U.S.C. § 100(b) – has survived unchanged to the present day. Act of Feb. 21, 1793, ch. 11, § 1, 1 Stat. 318.

From 1790 to the present day, patent statutes have

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[2] 35 U.S.C. § 100(b) states that "'process' means process, art or method."

consistently provided that patents can issue only for physical and tangible things – or processes for manipulating such physical, tangible things. Thus, section 101 requires that products eligible for patenting must be tangible and physical things or processes carried out on tangible and physical things.

2. The Jurisprudential Foundations of the Federal Circuit's Decision Failed to Recognize or Apply the Requirements for Patent Eligibility Under Section 101.

In order to fully address the infringement issue in this appeal, this Court would well-serve the patent system by correcting the Federal Circuit's jurisprudence relating to section 101. This is appropriate because patent-eligibility under section 101 was foundational to its holding on the section 271(f) issue in this case.

The Federal Circuit has taken views that appear on their face to be inconsistent with the requirement that patented inventions themselves must be physical and tangible. It has treated the four statutory categories for subject matter eligibility as more illustrative than definitive. It has cited the concreteness of the utility of the patented subject matter as sufficient evidence of its eligibility for patenting. The Federal Circuit has also moved the question of subject matter eligibility for patenting away from a focus on the claimed invention itself by emphasizing the role of other factors relating to patentability. The court's deviation from the words of the patent statute is best captured in this passage from its 1998 *State Street Bank* decision:

> The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to – process, machine, manufacture, or composition of

> matter – but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other "conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice. For purpose of our analysis, as noted above, claim 1 is directed to a machine programmed with the Hub and Spoke software and admittedly produces a "useful, concrete, and tangible result." This renders it statutory subject matter, even if the useful result is expressed in numbers, such as price, profit, percentage, cost, or loss.

State Street Bank & Trust Co. v. Signature Fin. Group, Inc., 149 F.3d 1368, 1375 (Fed. Cir. 1998), *cert. denied*, 525 U.S. 1093 (1999) (citation omitted).

The Federal Circuit's *State Street Bank* opinion provided the foundation for its subsequent decision in *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir.), *cert. denied*, 126 S. Ct. 568 (2005). The *Eolas* court held that computer software code by itself represented patent-eligible subject matter. In its decision in the present case, the Federal Circuit relied explicitly on *Eolas* to support its conclusion that software code necessarily can qualify as a component of a patented combination under a section 271(f) infringement analysis:

> The first question, *i.e.*, whether software may be a "component" of a patented invention under § 271(f), was answered in the affirmative in *Eolas Techs. Inc. v. Microsoft Corp.*, which issued while the instant appeal was pending. In that case, we held that "[w]ithout question, software code alone qualifies as an invention eligible for patenting," and that the "statutory language did not limit section 271(f) to patented 'machines' or patented 'physical structures,'" such that software could very well be a "component" of a patented

invention for the purposes of § 271(f).

AT&T Corp. v. Microsoft Corp., 414 F.3d 1366, 1369 (Fed. Cir. 2005) (citations omitted).

Contrary to *Eolas*, software code by itself is not patent-eligible subject matter under section 101. Software code (commonly known as "object code") is universally understood as being a sequence of binary values that is commonly represented as a series of "zeros" and "ones." Its *alter ego* is so-called "source code" that is written in a human-intelligible computer programming language.[3] Thus, what the "object code" encodes is a set of instructions (information) that can be recognized by a digital computing machine. Through the computing machine's recognition of the object code, the computing machine's functioning is directed.

Software, whether machine-recognized "object code" or human-intelligible "source code," is – in and of itself – simply information. It is instructions or directions. It is clearly not a "process, machine, manufacture, or composition of matter" under section 101 any more than it would have been an "art, manufacture, engine, machine, or device" under the 1790 Patent Act.

The Federal Circuit, therefore, contradicted the patent statute when it reached its *Eolas* conclusion that software code alone could be subject matter eligible for patenting. Although the Federal Circuit correctly took notice of the fact that software code can produce "useful, concrete and tangible results," it ignored the explicit section 101 requirements that preclude issuing or maintaining a patent on results, however useful, tangible and concrete, as opposed to products and processes.

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[3] *See* Petitioner's Brief at 1, 3-5.

Section 101 completely refutes the notion that Congress permitted an invention to be patented simply because the inventor could point to a useful, concrete and tangible *result* produced by an invention. It is the invention itself as set out in the claim in the patent that must be tangible and physical, as must – in the case of a combination – any of its discrete elements.

The jurisprudential foundations of the present case, which include the erroneous *State Street Bank* framework for deciding issues of subject matter eligibility for patenting and, more especially, the *Eolas* holding that software code alone qualifies as an invention eligible for patenting, clearly conflict with section 101 and led to the wrong decision in this case. To resolve this case, therefore, this Court should specifically disavow the analytical framework in *State Street Bank*, which can be wrongly construed to support patent-eligibility for software code and other intangible subject matter so long as it produces "concrete results." This Court should hold that Congress, while making eligible for patenting anything under the sun made by man through expansive and inclusive language,[4] has for more than 200 years consistently limited what can be patented to physical and tangible *things*, not intangibles that might produce some "useful, tangible, and concrete results." Finally, because software code is not in and of itself subject matter eligible for patenting, it does not automatically follow, as the Federal Circuit has held in *Eolas*, that it can represent a "component" under section 271(f) of a patented combination.

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[4] This Court has properly construed § 101 broadly, noting that Congress intended statutory subject matter to "include anything under the sun that is made by man." *See Diamond v. Chakrabarty*, 447 U.S. 303, 309 (1980) (quoting 82d Cong., 2d Sess., 5 (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess., 6 (1952)).

B. Software Code Cannot Represent a "Component" of a Claim Directed to a Combination of "Elements."

When an invention is claimed as a combination of elements, as most are, the patent statute requires that each such element itself must be physical and tangible. This limitation exists because 35 U.S.C. § 112, sixth paragraph, requires that the individual claim elements of combinations must be limited to specific structures, materials or acts. Thus, even if section 101 did not so require, every invention expressed as a combination of elements must be physical and tangible because section 112 commands that each of its constituent elements must be structures, materials, or acts.

The provisions of section 112, sixth paragraph, state:

> An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of *structure*, *material*, or *acts* in support thereof, and such claim shall be construed to cover the corresponding *structure, material, or acts* described in the specification and equivalents thereof.

(emphases added) In this paragraph, Congress dealt with the situation in which an inventor of a combination of discrete elements seeks to describe one or more of the elements in a claim of a patent wholly in terms of the function to be performed by the element or elements.

A claim element of this type is commonly referred to as a "means-plus-function" element where the claimed combination represents a product (machine, manufacture or composition of matter) or a "step-plus-function" element where the claimed combination represents a process. Under section 112, sixth paragraph, a means-plus-function or step-plus-function element, although failing to explicitly set out a specific structure, material, or act in the claim itself, will nonetheless be limited to the corresponding structures or

materials or acts described in the patent specification and the equivalents thereof. The terms "structure" and "material" relate to inventions claimed in terms of a product, while the term "acts" relates to inventions claimed as processes. *O.I. Corp. v. Tekmar Co., Inc.*, 115 F.3d 1576, 1582-83 (Fed. Cir. 1997) ("In this paragraph, structure and material go with means [products], acts go with steps [processes].").

The plain meaning of section 112, sixth paragraph, is that a discrete element of a claim to a combination must either be set out as something tangible and physical (*i.e.*, a structure, material or act), or, if it is expressed as a means or step for performing a specified function, then it will nonetheless be interpreted as something tangible and physical, *i.e.*, the structure, material, or acts described in the specification or equivalents thereof. Either way, each and every element in a claim to a combination can only be subject matter that is tangible and physical.

The remaining inquiry in this case, then, involves the relationship between the "components" of a claimed combination and the constituent "elements" of the claimed invention. In particular, must the component or components of a patented invention that is claimed as a combination of elements necessarily also be tangible and physical for the purposes of determining infringement under section 271(f)?

The Federal Circuit's erroneous holding that software code by itself was patent-eligible permitted it to avoid addressing the relationship between the terms "elements" and "components." More importantly, it meant that the Federal Circuit could avoid grappling with the actual claims of the patent and any analysis of the discrete *elements* of the claimed combinations.

Claim 24 of the patent in suit is both illustrative and representative of the patent claims. Claim 24 can be parsed into its constituent elements as follows:

24. Apparatus for encoding a speech pattern comprising

[1] means for partitioning a speech pattern into successive time frames;

[2] means responsive to the frame speech pattern for generating for each frame a set of speech parameter signals;

[3] means responsive to said frame speech parameter signals and said frame speech pattern for generating a signal representative of the differences between said frame speech pattern and said frame speech parameter signal set;

[4] means responsive to said frame speech parameter signals and said differences representative signal for generating a first signal corresponding to said frame speech pattern;

[5] means responsive to said frame speech parameter signals for generating a second frame corresponding signal;

[6] means for generating a signal corresponding to the differences between said first and second frame corresponding signals; and

[7] means responsive to said frame differences corresponding signal for producing a third signal to modify said second signal to reduce the frame differences corresponding signal.

The seven discrete elements of claim 24 are each expressed in the means-plus-function format that is permitted under section 112, sixth paragraph.[5] Under the provisions of

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[5] Claims 10–18, 24–31, 33–36, and 40–41 of the patent at issue are all subject to section 112, sixth paragraph, as claims set out in a "means-plus-function" format. The remaining 20 claims are process claims that

section 112, sixth paragraph, each of these seven discrete elements is limited to specific, corresponding structures, materials, and acts set out in the patent specification and the equivalents thereof.

If the Federal Circuit had not short-circuited its analysis by concluding that software code itself was patent-eligible subject matter, its inspection of the patent claims would have led it to conclude that software code *by itself* could not have formed any one of the discrete elements of the combination claimed in the patent. The reason it would have made such a conclusion is that, as discussed above, software code by itself is neither a structure, a material, nor an act, as each discrete element of the claims to a combination must be.

The only remaining question for the court would have been whether the term "component" with respect to a combination under 271(f) could have a different meaning from the term "element" used in section 112, sixth paragraph. While it might be possible to marshal an argument that a component might consist of one or more elements, it is not possible to support a contrary contention – an element certainly cannot be subdivided into components though any stretch of the patent laws.

First, there is no basis for concluding that, in enacting section 271(f), Congress intended that a single component of a patented combination would be anything different from – most particularly anything lesser than – a discrete element of a patented combination. In particular, Congress provided no framework for parsing a claim into components in any manner differently from parsing the claim into elements.

Second, nothing in the patent statute provides any basis for concluding that, having explicitly set out the requirements for claiming a combination of elements,

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are not on their face set forth in a "step-plus-function" format.

Congress intended a different formulation for determining the discrete components forming the claimed combination. Indeed, a holding that the "components" of a claimed combination should be ferreted out by subdividing the discrete elements of that combination would only succeed in making the law of patent infringement under section 271(f) hopelessly uncertain and unpredictable. This would be the last thing that Congress could have intended in crafting a provision defining the infringement of a patent.

Furthermore, the terms "element" and "component" are linguistically synonymous. An "element" is commonly understood as a "fundamental, essential, or irreducible constituent of a composite entity,"[6] or "a constituent part" or "a distinct part of a composite device."[7] A "component" is either the same (*e.g.*, a "constituent element, as of a system" or "a constituent part") or very nearly so (*e.g.*, a "part of a mechanical or electrical complex."[8])

Finally, the Federal Circuit has interpreted the term "element" to be either synonymous with or representative of a subset of a "component" (but never *vice versa*) for the purposes of interpreting other issues of patent infringement: "'Element' may be used to mean a single limitation [in a patent claim], but it has also been used to mean a series of limitations which, taken together, make up a component of the claimed invention." *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1259 (Fed. Cir. 1989).

In light of the entire statutory framework for patents,

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[6] http://www.answers.com/topic/element (last visited Dec. 14, 2006).

[7] http://www.merriam-webster.com/dictionary/element (last visited Dec. 14, 2006).

[8] http://www.merriam-webster.com/dictionary/component (last visited Dec. 14, 2006) or http://www.answers.com/topic/component (last visited Dec. 14, 2006).

therefore, the "elements" and "components" of patented combinations must be parsed in an identical fashion. The conclusion that the terms "elements" and "components" have synonymous meanings under the patent law is necessary not only in view of the plain meaning of the terms themselves, but also because this is the only logical implementation of Congress' intent in the use of the term "component" in section 271(f). It necessarily follows that each component of that combination must likewise be tangible and physical.

A proper analysis under the patent statute disqualifies the Microsoft software code by itself as being a discrete component of the patented combination because software, by itself, is not tangible or physical. The supply of the software code itself cannot, therefore, actively induce the infringement of a patent under section 271(f).

C. The IT Industry's Complaints Against the Patent System Are Partly Attributable to Failure of the Lower Courts to Rigorously Apply Sections 101 and 112 of Title 35.

The facts of this case provide especially compelling policy reasons for this Court to clarify that patenting of inventions must be reserved for subject matter that is tangible and physical and, most particularly, where the invention can be characterized as a combination of elements or components, such discrete elements or components must themselves be tangible and physical things.

Petitioner Microsoft and many other companies in the information technology ("IT") industry are members of a group that has taken the name "Coalition for Patent Fairness." This group has described a wide-ranging set of problems that its members assert they experience with the patent system. The Coalition and its members are seeking legislative redress, including sweeping changes to U.S.

patent law. One aspect of the redress they seek is legislation that would repeal section 271(f) outright.

A prime complaint that Microsoft and other Coalition members have with the current operation of the U.S. patent system is the lack of appropriate notice. They cite the difficulty in identification of adversely owned patents of potential relevance to the products and services that come from their respective research and marketing efforts. Their search for greater certainty in the patent system has undeniable validity – identifying potentially infringed patents relevant to a new product offering should not be a Magical Mystery Tour for the potential infringer.

It is apparent that Microsoft and the members of this Coalition believe that the serious problems arising from such occult patenting must be addressed:

> [W]hen a business is developing a new product, it often is extraordinarily difficult – notwithstanding the business's best efforts – to identify all of the existing patents, let alone pending patent applications, that may be relevant to each of the components that make up that new product. This problem is compounded by the fact that patent holders' subsequent infringement claims sometimes bear little relation to the invention described in the patent and therefore cannot be anticipated by the potential defendant.[9]

Without question, patents containing claims to subject matter that is ephemeral and abstract, rather than clearly identified as physical and tangible, complicates the ability to identify those patents that may be relevant to making the

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[9] "The Patent Reform Act of 2006, S. 3818, Enhances Innovation and Promotes Economic Growth," p. 11, *at* http://www.patentfairness.org/CPF_White%20paper%20v3.pdf (last visited Dec. 14, 2006).

commercial decisions to bring new products or services to market.

Limiting patenting to what Congress dictated via 35 U.S.C. §§ 101 and 112 can be eligible for patenting will squarely address the concerns of Microsoft and the IT industry with regard to the ability to understand patents and identify the relevance of what is being claimed. Claim 24 of the AT&T patent provides a proverbial "poster child" for the concerns of the Coalition for Patent Fairness as they relate to the inability to identify potentially infringed patents.

Because inventors are permitted by Congress to set out a claim entirely in the form of a series of means for performing a set of functions, it is particularly important to require that each such element of those claims relate to an identifiable structure, material, or act for carrying out the described function set forth in the claim itself or identified in the patent specification. If the discrete elements of a claim can consist solely of *information*, and the content of the information is, in turn, identified only by its *function* when put to some use, understanding the nature of what has been patented becomes much more difficult.

The consequence of errant Federal Circuit rulings on what is eligible for patenting has in large measure produced – or at least seriously exacerbates – the concerns expressed by the Coalition for Patent Fairness. The consequence of reversing this errant jurisprudence of the Federal Circuit would at a minimum substantially dilute such concerns. If this Court clarifies that each element in a claimed combination must be tied to a specific structure, material, or act – either one expressly set out in the claim or identified in the patent specification – the task of identifying patents that will be of relevance to a product could be remarkably simplified. What is being patented should be identified with more specificity than just that it is a set of machine-recognizable instructions for carrying out some desired function.

The Coalition for Patent Fairness is not the only entity raising concerns over patenting in the information technology industry sector. While the Coalition has identified the problems with fully understanding the import of individual patents, other commentators have noted that such problems with individual patents are magnified when such patents are sought and issue in the thousands and tens of thousands, year after year, thereby creating so-called "patent thickets."[10] By permitting individual patents to issue that *overreach* the subject matter eligibility constraints on patenting, the collective impact of the creation of "thickets" of such patents in an affected area of technology creates the possibility of *patent overprotection* beyond anything envisioned by Congress in enacting rigorous requirements for patenting.

The aggregate impact of patent overprotection has been examined in a recent report published by the Council on Foreign Relations. This report characterizes overprotection, including the development of alleged "patent thickets" as a possible threat to the Nation's economic well-being:

> America's robust economic competitiveness is due in no small part to a large capacity for innovation. That capacity is imperiled, however, by an increasingly overprotective patent system. Over the past twenty-five years, American legislators and judges have operated on the principle that stronger patent protection engenders more innovation. This principle is misguided. Although intellectual property rights (IPR) play an important role in innovation, the recent

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[10] The term "patent thicket" has been used to describe the proliferation of patents impacting some areas of technology. Carl Shapiro, *Navigating the Patent Thicket: Cross Licenses, Patent Pools, and Standard-Setting* (March 2001), *at* http://ssrn.com/abstract=273550 (last visited Dec. 14, 2006).

> increase in patent protection has not spurred innovation so much as it has impeded the development and use of new technologies.[11]

Objective evidence that "overprotection" may be at work in the information technology industry sector is difficult to find. In its absence, however, empirical evidence demonstrates an order of magnitude difference in patenting in the IT industry sector compared to other high-technology industry sectors, notably the pharmaceutical industry. As an example of the comparative patenting intensity in relation to research and development expenditures, Microsoft expended $6 billion on R&D in its fiscal year 2005 ending on June 30.[12] During 2005, the United States Patent and Trademark Office issued a total of 750 patents to Microsoft.[13] By comparison, *Amicus* Eli Lilly and Company expended $3 billion on R&D during 2005 and was issued 48 patents – one-half of Microsoft's R&D expense, but one-fifteenth fewer issued U.S. patents.[14]

Comparable data for other leading companies in these two high-technology industry sectors appears to confirm an order of magnitude greater intensity of patenting for information

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[11] Keith Maskus, *Reforming U.S. Patent Policy: Getting the Incentives Right,* CSR No. 19, Council on Foreign Relations, p. 3, *at* www.cfr.org/content/publications/attachments/PatentCSR.pdf (last visited Dec. 14, 2006).

[12] Microsoft Corporation Annual Report, Fiscal Year 2005 *at* http://www.microsoft.com/msft/reports/ar06/staticversion/10k_fr_inc.html (last visited Dec. 14, 2006).

[13] *Top 300 Organizations Granted U.S. Patents in 2005, at* www.ipo.org/AM/TemplateRedirect.cfm?template=/CM/ContentDisplay.cfm&ContentID=3384 (last visited December 14, 2006).

[14] Eli Lilly and Company Annual Report, 2005, p. 1, *at* http://www.lilly.com/investor/annual_report/lillyar2005.pdf and *Top 300 Organizations Granted U.S. Patents in 2005, id.*

technology companies:[15]

Information Technology		Pharmaceutical	
IBM	2941	Pfizer	389
Hewlett-Packard	1808	Johnson & Johnson	379
Micron	1561	Bayer	176
Intel	1549	Sanofi-Aventis	145
Texas Instruments	734	Bristol-Myers Squibb	113
Sun Microsystems	715	Merck	100

At least part of this apparent difference in the pattern of patenting may be attributable to the ability (under current Federal Circuit jurisprudence) to obtain patents by skirting the statutory requirements under either or both of sections 101 and 112.

If such overreaching and overprotection are creating the adverse consequences noted in recent reports and analyses, the overreaching and overprotection phenomena could be addressed by this Court holding that section 101's subject matter eligibility requirements, as set out by Congress in the present patent statute and in each of its predecessors for over 200 years, must be rigorously observed – claims and their constituent elements must be directed to tangible and physical subject matter.

IV. DISPOSITION BY THIS COURT

Amicus Eli Lilly and Company, therefore, asks that this Court declare the following:

(1) While Congress intended that anything under the sun made by man is eligible for patenting, it has limited patent-eligible subject matter to what is physical and tangible. This

[15] *Top 300 Organizations Granted U.S. Patents in 2005, id.*

rule excludes patenting software and software code alone, but does not bar from patent-eligibility tangible inventions expressed as novel computing machines.

(2) It is not sufficient for patent eligibility that the subject matter claimed in a patent produce a concrete, useful and tangible result; the patented subject matter must itself be concrete, useful and tangible.

(3) Subject matter that is not itself eligible for patenting cannot represent a component of a combination invention under 35 U.S.C. § 271(f) because each such component must itself be a concrete and tangible entity, *i.e.*, each component must represent something that is or could be expressed as a claim element that is expressly defined as a structure, material, or act, or that would be so limited under the provisions of 35 U.S.C. § 112, sixth paragraph.

CONCLUSION

The ruling of the Court of Appeals for the Federal Circuit should be reversed because it conflicts with the plain meaning and purpose of sections 101 and 112 of the patent statute.

Respectfully submitted,

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Nos. 05- 1056

In the
SUPREME COURT OF THE UNITED STATES
October Term 2006

MICROSOFT CORPORATION
Petitioner,
v.
AT&T CORP.,
Respondent.

On a Writ of Certiorari to the United States
Court of Appeals for the Federal Circuit

AMICUS CURIAE BRIEF

FÉDÉRATION INTERNATIONALE DES CONSEILS
EN PROPRIÉTÉ INDUSTRIELLE (FICPI)
In Support of Petitioner

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QUESTION PRESENTED

The questions presented in the Petition are:

(1) Whether digital software code—an intangible series of "1's and "0's"—may be considered a "component[] of a patented invention" within the meaning of Section 271(f)(1); and, if so,

Whether copies of such a "component[]" made in a foreign country are "supplie[d] . . . from the United States."

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INTRODUCTION

Fédération Internationale des Conseils en Propriété Industrielle ("FICPI") respectfully submits this amicus brief in support of Petitioner to present its position that 35 U.S.C. §271(f) interferes with sovereign power of foreign governments to grant the right to exclude only owners of international patents granted by that sovereign nation applies to a material or apparatus used in the performance of a patented process invention.[1] As set forth *infra*, because FICPI's international membership consists of both inventors and their attorneys, FICPI is in a unique position to assist this Court concerning the impact of expanding the extraterritorial reach of Section 271(f) to parts of patented inventions.

INTEREST OF THE AMICUS CURIAE

Established in 1906, FICPI is a Switzerland-based international and non-political association of approximately 4,000 industrial property attorneys from over eighty countries (including the United States). FICPI's members represent individual inventors as well as large, medium and small companies. One of the members' major roles is to advise inventors in intellectual property matters and secure protection for industrial innovation. FICPI supports the uniform global protection

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[1] FICPI states that counsel for the parties did not author any portion of this brief and that FICPI received no monetary contribution to the preparation or submission of this brief from any individual or entity other than FICPI. The contents of this brief solely represent the views of FICPI and not of any of its individual members.

of patents, the global harmonization of substantive patent law, and the interests of inventors and the U.S. Patent and Trademark Office ("the PTO") for recognizing a fair scope of patent protection consistent with the claimed invention.

FICPI is one of only two major world organizations that advises the World Intellectual Property Organization ("WIPO"), an intergovernmental organization, on all intellectual property matters. In this capacity, FICPI members have attended Diplomatic Conferences concerning international intellectual property treaties and practices. WIPO is dedicated to promoting and protecting intellectual property rights worldwide. Its 180 member states (including the United States) comprise almost ninety percent of the world's countries. See About WIPO, at http://www.wipo.int/about-wipo/en/. As one of the sixteen specialized agencies of the United Nations system of organizations, WIPO administers intellectual property matters recognized by the U.N.'s member states and twenty-three international treaties concerning intellectual property. See *id.* The United States is a member of the WIPO Standing Committee on the Law of Patents ("SCP") and is involved with WIPO's efforts to harmonize substantive patent law worldwide, including pursuant to a Substantive Patent Law Treaty, which currently is in draft form.[2]

As many of its members are foreign practitioners, and by reason of its role as a WIPO advisor, FICPI has a unique perspective on the global impact of extraterritorial

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[2]*See* Substantive Patent Law Harmonization, at http://www.wipo.int/patent/law/en/harmonization.htm.

application of U.S. patent laws. Realizing the goal of global harmonization of substantive patent law requires that U.S. courts adhere to the settled presumption against extraterritorial application of U.S. patent laws. This is the case particularly here, where the legislative history underlying Section 271(f) reflects a clear intent not to extend Section 271(f) to impose liability where a patented process is performed entirely in a foreign country and never imported into the United States. Such a dramatic change in the law—with its impact on foreign sovereignty, U.S.-foreign relations, and the global economy (particularly in high technology sectors) —is beyond the authority of Congress and is contrary to international treaties.

SUMMARY OF ARGUMENT

The American patent system is founded upon the interest in encouraging the creation of, and investment in, innovative technology, which requires the participation of and cooperation with foreign countries. Expanding Section 271(f) to cover infringement in foreign countries is contrary to this philosophy. Such an expansion also is inconsistent with WIPO's efforts to harmonize patent laws, the United States' obligations in international treaties and the settled practice of deferring to a foreign country's assessment of the scope and reach of its patent laws.

The briefing of the parties and *amici* regarding the Petition that was granted did not fully explain the fundamentals of territoriality, the issue of primary interest to FICPI. United States law relates to the United States, not to activities wholly within foreign countries. FICPI

examines the key words at issue and urges that the same meaning of words having special meaning must have the same meaning in Section 271(f) as they do in other subparts of Section 271 and in other Sections of patent law. FICPI further contends that Section 271(f) is *ultra vires*, beyond the authority of Congress to regulate acts occurring solely in foreign countries.

ARGUMENT

1. FIRST PRINCIPLES

The Preamble to the Constitution makes it clear that the "constitution for the United States of America" has several purposes, including "to form a more perfect union" in the United States; "insure domestic tranquility" in the United States, and "promote the general welfare" in the United States. These purposes or goals have nothing to do with foreign countries. Indeed, the young nation was seeking a more perfect Union than Great Britain, more tranquil than the bloody revolution concluded not long before, with a better "general welfare." This nation wanted a *departure* from the situation in foreign countries, mostly European, from whence its citizens migrated. There was never a thought that United States laws would govern activities exclusively within foreign countries.

The substance of the Constitution includes, in Article 1, the powers of Congress to act in establishing the purposes specified in the preamble. Section 8 of Article 1 lists the specific powers of Congress. Clauses 1, 2, 4, 6, 15, 16, 17, and 18 expressly are limited to the "United States" or the "Union," and the rest, including the patent clause (Article I, Section 8, clause 8) are impliedly

so related. It is not conceivable that the patent clause contemplated securing the right of inventors to exclude patent infringement occurring exclusively in foreign countries.

The briefs in this case prior to the grant of the Petition use many ordinary words and some terms of art. It is appropriate to differentiate the two kinds of terms at the outset for clarity. In 1790, Congress passed the first patent law, indicating the kinds of inventions that may be protected by patent. Today, 35 U.S.C. §101 uses the ordinary words "any new and useful process, machine, manufacture, or composition of matter" may be patented. These generic words were intended to accommodate all areas of technology contemplated in 1952 (ch. 950, §1, 66 Stat. 797). Of the many definitions in *Webster's Third New International Dictionary* (1968), the most relevant here is "process" "**d** 2 an artificial or voluntary progressively combining operation that consists of a series of controlled actions or movements systematically directed toward a particular result or end <the ~ governing the mechanism of a clock."

A "machine" also has many definitions in that dictionary, the most helpful of which is "**syn** MACHINE, ENGINE, APPARATUS, APPLIANCE signifying, in common, a device, often complex, for doing work beyond human physical or mental limitations or faster than human hand or mind" followed by detailed examples of each of the four synonyms in literature. A "manufacture" also has several definitions in the 1968 dictionary, including "**5:** the act or process of making, inventing, devising or fashioning : PRODUCTION, CREATION." The product

or creation made, invented, devised or fashioned is what §101 teaches may be patented.

A "composition" of matter is, in the same dictionary: "**g** the nature of a chemical compound or mixture as regards the kind and amounts of its constituents being usu. expressed for a chemical compound in numbers of atoms of each element in the molecule or in percentages of each element by weight."

Machines, manufactures and compositions of matter are tangible, whereas processes are intangible. There is no departure from the ordinary understanding of the meaning of these words. All of these words have their ordinary dictionary meaning, with no hidden or special meaning in patent law.

Likewise, the words "United States" and "this country" have a defined meaning in patent law, 35 U.S.C. §100(c), as "the United States of America, its territories and possessions," which again is the ordinary meaning.

Congress has, on the other hand, used many of the words here under discussion with special meaning in patent law. The word "element" in a "claim for a combination may be expressed as a means or a step for performing a specified function without the recital of structure, material of acts in support thereof" in 35 U.S.C. §112 paragraph 6. Thus, an "element" in a claim may be tangible "means" having "structure" or "material," or it may be a "step" in an intangible process. It is important to use these words in the manner Congress used them as a matter of statutory construction, and not necessarily according to the different meanings from the dictionary. "Means" is associated with a tangible aspect of a

combination of tangible parts, while "step" is one of a series of parts of an intangible process.

Reissue Patent Number 32,590, at issue here, has claims 1-9 and 32 for a "method for processing," claims 19-23 for a "method for encoding," and claims 37-39 and 42-43 for a "method producing a speech pattern," all within the intangible "process" category of paragraph 6 of §112. It also has the remaining claims drawn to "means" combinations within paragraph 6 as well as "machines" or "apparatus" within §101. Accordingly, the patent relates to intangible processes and tangible means and structure.

The Brief for the United States as Amicus Curiae, filed in response to the invitation of the Court before grant of the Petition, states at page 10 that "[n]othing in the text of Section 271(f) supports the artificial "tangibility" limitation suggested by petitioner." There is nothing "artificial" about §101. "Processes" are intangible and "machines" are tangible.

Microsoft's predecessor programs were rightly called "word "*processing*" programs. Even the earliest computers had CPUs, "central *processing* units." It is not a stretch from ordinary language to grasp that processes are intangible. The Government's Brief acknowledges (at 8-9) that "while the concept of the Windows software lacks physical existence, each copy of the object code that was created overseas and then installed in an allegedly infringing computer overseas unquestionably had physical existence." This is a *non sequitur*. The word "concept" has special meaning in patent law as the predecessor step in the intangible *process* of making an invention. The second step in the *process* is reduction to practice of the invention. Both steps are intangible *process* steps in the

creative *process*. The manifestation of the reduction to practice of a machine, manufacture or composition of matter is certainly tangible, but the creative *process* of conception and reduction to practice or readying for patent (*Pfaff v. Wells Electronics, Inc.* 525 U.S. 55 (U.S. 1998)) is unquestionably intangible.

At page 9 of the Government's Brief, the assertion is made that "it is only because the object code has physical existence that the computer's central processing unit is able to detect and implement the software." In truth, detecting and implementing are intangible *processing* steps performed by the central *processing* unit. Having the presence or absence of magnetized areas in a magnetic medium represent ones and zeros is not "physical existence." Nor is the presence or absence of light traveling through a fiber optic medium a "physical existence." Rather, both are manifestations of intangible information being *processed* or manipulated to perform specified functions in an intangible *process*. The magnetized areas or light containing areas are mere metaphors for intangible information, and are not physical embodiments of information. Information, like language, is intangible.

The concept of an invention, like information itself, is intangible, but that is not to say that either does not exist. While a patent describes an invention, the invention exists "*in pais*, outside of the documents themselves" *Bischoff v. Wethered*, 76 U.S. 812, 815, 9 Wall 812 (1870) quoted in *Markman v. Westview Instruments, Inc.* 517 U.S. 370, 386 (1996). So too the AT&T concept exists *in pais* as a whole, and not just in parts, components and ingredients. *Deepsouth Packing*

Co. v. Laitram Corp. 406 U.S. 518 (1972) correctly concluded that "We cannot endorse the view that the 'substantial manufacture of the constituent parts of [a] machine' constitutes direct infringement when we have so often held that a combination patent protects only against the operable assembly of the whole and not the manufacture of its parts" (406 U.S at 528). 35 U.S.C. §103(a) directs the consideration of "the subject matter as a whole" in the obviousness determination.

The Government asserts at page 7 of its Brief that the word "component" in Section 271 is not defined, so it must be given its "ordinary or natural meaning." "Software" is described on page 8 as a "component" of a "computer system," citing *Dictionary of Computing (3d ed. 1990)*. "Component" in patent law is a term of art in 35 U.S.C. §271(c) that requires three conditions for liability. First, the component must constitute a "material part of the invention." Second, it must be used by the infringer "knowing the same to be specially made or especially adapted for use in an infringement of such patent." Third, the component must not be a "staple article or commodity of commerce suitable for a substantial noninfringing use."

It is a bedrock principle of statutory construction that a term must have the same meaning each time that it appears in the statute. The proper construction of "component" is that of §271(c), since the term cannot have one meaning in subdivision (c) and a different meaning in subdivision (f).

The importance of "component" in §271(c) is that it does not stand alone. For there to be contributory infringement under §271(c), there must be direct

infringement to which the component contributes. "There can be no contributory infringement without the fact or intention of a direct infringement." *Deepsouth* at 526. If the direct infringement is in a foreign country by foreign sellers of computers who sell only to foreign buyers, Section 271 cannot reach that infringement of a U.S. patent.

Copying of information is not patent infringement. Exporting a disc that can be copied in a foreign country cannot be patent infringement of a United States patent. If "the act of copying is subsumed in the act of supplying," as the majority below said, neither act is patent infringement. If there is no direct infringement in the United States, there can be no contributory infringement in the United States.

2. TERRITORIALITY

The Paris Convention (1883) is a treaty to which the United States adheres. Article 4 bis (1) reads: "Patents applied for in the various countries of the Union by nationals of countries of the Union shall be independent of patents obtained for the same invention in other countries, whether members of the Union or not." This "independent" concept means that a United States patent is independent of a patent in Germany, for example, and a United States patent does not govern acts in Germany, nor does a German patent govern acts in the United States. The concept of "territoriality" has been central to international law for over a century.

Article 25(1) states: "Any country party to the convention undertakes to adopt, in accordance with its constitution, the measures necessary to ensure the application of this Convention." The United States has

ensured that its laws respected the territoriality under the Paris convention until the enactment of 35 U.S.C. §271(f) a century after the ratification of the Paris Convention.

The Paris Convention was a "Treaty" made under Article II, Section 2, paragraph 2 of the Constitution with the advice and consent of two thirds of the Senate. Accordingly, adherence to the territoriality or "independence" idea and to the appropriate measures to ensure the application of that idea in United States laws is long standing and the law of the land. "The judicial power shall extend to all cases, in law and equity, arising under . . . treaties made," under Article III, Section 2, paragraph 2 of the Constitution.

It should be clear that this Court has the power to apply the Paris Convention, in particular the concept of territoriality, in deciding this case. The issue that FICPI suggests is appropriate is whether §271(f) is consistent with the duty of the United States to "adopt, in accordance with its constitution, the measures necessary to ensure the application of this [Paris] Convention."

To be sure, the Paris Convention (1883) Article 19 allows that "countries of the Union" may "reserve the right to make separately between themselves special agreements for the protection of industrial property." But for §271(f) to extend to foreign countries, there must be special agreement between the United States and the foreign countries by treaty, not by unilateral act of Congress.

3. ULTRA VIRES

At least since 1883, the Paris Convention has precluded a finding of patent infringement where the acts of making, using, selling or offering for sale are

performed in a country of the Union outside the country having an independent patent. In other words, if AT&T has a patent in the United States and a patent in Germany on the same invention, and the acts alleged to be infringement are entirely performed in Germany, the independent German patent must be applied, not the United States patent. It is not an issue of comity; it is an issue of the binding effect of the Paris Convention.

The rights of authors and inventors secured under the Patent Clause are not limited to those in the United States because the Paris Convention, Article 2(2), states that "no requirement as to domicile or establishment in the country where protection is claimed may be imposed upon nationals of countries of the Union for the enjoyment of any industrial property rights." However, the patent right granted pursuant to Congressional legislation cannot extend to "countries of the Union for the enjoyment of any industrial property rights." If other nations want to promote the progress of science and the useful arts in their countries, those nations must so legislate, because United States patent law is directed to promoting useful arts in this country only.

Three years after Congress enacted §271(f), it enacted §271(g). H.R. Rep. No. 60, 100th Cong., 1st Sess. 6 (1987) stated that "there is no logical reason to exclude from the ambit of patent infringement acts associated with the abuse of a United States process as long as they occur within the reach of United States domestic law." This legislative history is quoted in *Pfizer, Inc. v. Aceto Corp.*, 853 F. Supp. 104, 105 (S.D.N.Y. 1994), followed by the finding that "Section 271(g) was not intended, and indeed there is serious doubt whether Congress would have the

authority – except perhaps by treaty – to prevent the use of a U.S. patented process in another country. Thus, §271(g) "will not give extraterritorial effect to U.S. law" and provides no remedy against foreign manufacturers whose infringing acts do not occur within the United States. S. Rep. No. 83, 100th Cong., 1st Sess. 48 (1987)." Since treaties are made by the executive branch, with the advice and consent of the Senate, Congress lacks authority to legislate patent infringement where all acts are outside the United States. The governing treaty is the Paris Convention of 1883.

Pfizer at 106 quotes Senator Lautenberg: "While U.S. courts may not reach a foreign manufacturer that has no presence in the United States, the bill would allow a patent owner to enforce its patent in the U.S. courts against the importer or seller of the foreign manufacturers product." Hearing on S. 568 before the Subcomm. on Patents, Copyrights and Trademarks of the Senate Comm. On the Judiciary 100th Cong., 1st Sess. 21 (1987). While the legislative history does not specifically support Judge Lasker's doubt in *Pfizer* about Constitutional authority of Congress, it clearly shows Congressional intent not to have extraterritorial reach in §271.

Another §271(g) case is *Cybiotronics, Ltd. v. Golden Source Electronics, Ltd.*, 2001 U.S. Dist. LEXIS 6191; 58 USPQ2d (BNA) 1385, 1391 (C. D. CA 2001): "The patent laws are limited to the geographical confines of the United States, and the Court is limited by the clear and obvious terms defining the scope of the statutes." If there is no extraterritorial reach in §271(a), (c), (e) and (g), to be consistent §271(f) should be construed to have no extraterritorial reach by reason of the Constitution and

by Treaty. Congress is not empowered under Article I, Section 8, Clause 8 to grant a right to exclude the use of an invention in a foreign country, contrary to the laws of the foreign country.

Baker v. Carr, 369 U.S. 186, 210-11 (1962) dealt with political questions, which are not usually thought to be an issue in patent infringement cases. The issue of whether acts performed entirely in a foreign country can be an infringement of a United States patent is not a matter committed to Congress to determine. "Deciding whether a matter has in any measure been committed by the Constitution to another branch of government, or whether the action of that branch exceeds whatever authority has been committed, is a delicate exercise of constitutional interpretation, and is a responsibility of this Court as ultimate interpreter of the Constitution."

Certainly, the debate in the European Union regarding the patentability of computer programs is political, not science-driven. *See CFPH L.L.C.'s Application*, Case No.CH 2005 APP 0009 (UK HIGH COURT OF JUSTICE, CHANCERY DIVISION, PATENTS COURT, 21 July 2005):

> "**International Conventions Are To Be Given a Purposive Interpretation**
>
> . . . [A]n international convention such as the European Patent Convention may be drafted by a committee not all of whose members speak the same mother-tongue and none of whom may be aware of, or care about, the aforesaid semantic convention" (paragraph 26).
>
> "Indeed the Convention is expressed in three languages, all equally authentic. It is therefore not

surprising that the methods of interpretation to be applied to such an international instrument are not the same. In particular, there is more room for a teleological interpretation. It may have its problems, of course – in particular, how to ascertain the *:elos*, or purpose" (paragraph 27).

"**The Items Were Excluded For Policy Reasons**" (before paragraph 30).

"*Computer Programs*

35. . . . The reason why computer programs, as such, are not allowed to be patented is quite different. Although it is hotly disputed now by some special interest groups, the truth is, or ought to be, well known. It is because at the time the EPC was under consideration it was felt in the computer industry that such patents were not really needed, were too cumbersome (it was felt that searching the prior art would be a big problem), and would do more harm than good. I shall not go into details here but it is worth noting that the software industry in America developed at an astonishing pace when no patent protection was available. Copyright law protects computer programs against copying. A patent on a computer program would stop others from using it even though there had been no copying at all. So there would have to be infringement searches. Furthermore you cannot have a sensible patent system unless there exists a proper body of prior art that can be searched. Not only are most computer programs supplied in binary form – unintelligible to humans – but most of the time it is actually illegal to convert them

into human-readable form. A patent system where it is illegal to search most of the prior art is something of an absurdity" (footnotes omitted).

This opinion is not the end of the debate, and it clearly has nothing to do with United States law. It is relevant to the regional patent systems that other nations choose for themselves as discussed in point 6 below. It is presented here to show that political and policy issues regarding computer programs make *Baker v. Carr* relevant to the determination of this case. Whether territorial reach of patent law is "committed by the Constitution to another branch of government" is far from clear.

The reach of Congress to exclude infringement in foreign countries is beyond its powers. It is *ultra vires*. Patents are by definition territorial. If the patent covers the "United States of America, its territories and possessions" (35 U.S.C. §100(c)), then it does not cover acts of infringement in foreign countries, outside of the regulatory authority of Congress. Respondent must seek relief in foreign courts under foreign patents, not in United States courts.

"It is emphatically the province and duty of the judicial department to say what the law is" *Marbury v. Madison*, 1Cranch (5 U.S.) 137 (1803). The Constitution does not permit Congressional regulation of torts or patent infringement committed by foreign citizens in foreign countries.

4. INTERNATIONAL LAW

The basic structure of the international patent system is territorial, i.e, a patent provides protection in the market of the nation (or regional entity in the case of the

European Patent Convention) granting the patent. This protects the freedom of other nations to apply their own different patent law principles within their own territories.

This point is confirmed most clearly in that region, Europe, in which integration of both the patent system and the judicial system has gone furthest. In Europe, there is a European Patent, granted under the Convention on the Grant of European Patents (October 5, 1973), but the European patent is essentially a bundle of national patents, to be enforced according to national law in each nation. As stated in the treaty, a patent confers in each State "the same rights as would be conferred by a national patent granted in that State" (Article 64(1)). Hence, the members of the Convention respect one another's national enforcement principles.

This respect is also reflected in Europe's arrangements for jurisdiction and the international enforcement of judgments. Under the Brussels Convention on Jurisdiction and the Enforcement of Judgments in Civil and Commercial Matters (September 27, 1968), now enacted as Council Regulation (EC) No. 44/2001 of 22 December 2001, Official Journal L 12/1 (Jan. 16, 2001), exclusive jurisdiction is given "in proceedings concerned with the registration or validity of patents . . . or other similar rights required to be deposited or registered, [to] the courts of the Contracting State in which the deposit or registration has been applied for, has taken place or is under the terms of an international convention deemed to have taken place." (Article 16(4) of the Brussels Convention, identical to Article 22(4) of the 2001 Regulation) These provisions have recently been interpreted to allow extraterritorial enforcement within

Europe of patents in only very limited situations in which there is a single defendant and validity is uncontested in any jurisdiction, *Roche Nederland BV v. Primus* No. C-539/03 (European Court of Justice (First Chamber) 13 July 2006 and *GAT v. Luk* No. C-4/03 (European Court of Justice (First Chamber) 13 July 2006).

A similar pattern is reflected in global intellectual property conventions. The Agreement on Trade-Related Aspects of Intellectual Property Rights, April 15, 1994 (to which the United States is a party) states:

> A patent shall confer on its owner the following exclusive rights:
>
> (a) where the subject matter of a patent is a product, to prevent third parties not having the owner's consent from the acts of making, using, offering for sale, selling, or importing for these purposes that product.

(Article 28(1)(a)) It is clear from the use of the term "importing" that it is only the national market that is required to be protected. And other nations retain the freedom to apply their own laws. Thus, members have the right to exclude from patentability "inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect" a variety of enumerated interests (Article 27(2)) .

The pattern is also reflected in the fundamental treaty covering patents (to which the United States is also a party), the Paris Convention. This treaty provides "[n]ationals" of any member country the same rights to protect industrial property as those held by nationals of the country granting the protection (Article 2). The basic concept is that a foreign inventor must be given the same

rights to obtain and enforce a patent as a domestic inventor, and, by implication, an inventor wanting coverage in several nations must apply for a patent in each of those nations and enforce it in each such nation, all in accordance with the law of the specific nation.

Although there is a very limited extraterritorial effect associated with the patent holder's right to limit imports of a patented product, the basic international scheme is that patents protect the national market, and that it is up to other nations to provide protection in their markets. Congress's recognition of this structure underlay *Deepsouth Packing Co. v. Laitram Corp.* 406 U.S. 518 (1972). "To the degree that the inventor needs protection in markets other than those of this country, the wording of 35 U.S.C. §154 and 35 U.S.C. §271 reveals a congressional intent to have him seek it abroad through patents secured in countries where his goods are being used. Respondent holds foreign patents; it does not adequately explain why it does not avail itself of them" (406 U.S. at 532) provides a limited exception, and must clearly be read narrowly in the face of this international legal structure.

5. PATENTABILITY OF SOFTWARE

This case deals with an area—software—in which there is significant international debate regarding patentability. Recent U.S. law, as developed by the Court of Appeals for the Federal Circuit has been very expansive. *A.T.&T. v. Excel Communications, Inc.*, 172 F.3d 1372 (Fed. Cir. 1999); *In re Alappat*, 33 F. 3d 1526 (Fed. Cir. 1994).

The European Patent Convention ("EPC") addresses the patentability of computer programs head on:

inventions shall not include "programs for computers" (Article 52(2)(c)). The case law in Europe has been divided as to whether patent claims relate to computer programs "as such," or whether programmed computers for performing tasks that are not mathematical expressions or business methods can be permitted.

A European Union effort was made to enact a 2002 Commission proposal to reconsider the patentability of computer programs for the European Union. The Proposed Directive was defeated in the European Parliament on July 6, 2005 (Common Position (EC) No 20/2005). European Parliament Press Release, "Software patents; the 'historic vote' in the European Parliament brings the battle to an end."

Perhaps most important, current efforts to negotiate international harmonization on the standards of patentability (the substantive Patent Law Treaty) are at an impasse, in part on the issue of the appropriate scope of coverage of software patents. These negotiations are being conducted at the World Intellectual Property Organization Standing Committee on the Law of Patents. The United States would like broad coverage of software and business methods; many other nations would like more narrow coverage. The dispute appeared sharply in the seventh negotiating session, World Intellectual Property Organization, Standing Committee on the Law of Patents, Seventh Session, Geneva, May 6 to 10, 2002 Draft Report, Scp/7/8 Prov. 2 (Sept 18, 2002), ¶¶ 159-173, and has led to a serious impasse, BNA 19 World Intellectual Property Report 7-17, "Official admits deadlock on advancing patent treaty talks," (July 2005). The negotiations are currently failing even in efforts to

define a modified agenda that would avoid such controversial issues, BNA 19 World Intellectual Property Report 11-19, "Compromise reached on advancing stalled patent law treaty talks (Nov 2005); ICTSD, Bridges, Weekly Trade News Digest, Vol. 10, No. 14, "WIPO patent harmonization talks adrift after meeting collapses," (26 April 2006).

6. AFFIRMANCE UNDERCUTS THE ABILITY OF OTHER NATIONS TO ENFORCE PATENT SYSTEMS OF THEIR OWN DESIGN

Under the decision in this case, and its predecessor, *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), software code alone can amount to "all or a substantial portion of the components of a patented invention" under 35 U.S.C. § 271(f). The result is that the production of anything anywhere in the world that relies ultimately upon the export of software code generated in the United States is subject to the reach of § 271(f). This could even reach tangible products with embedded software.

In the face of a basic international legal principle of territoriality, designed precisely to protect differences in patent law, and of major differences around the world with respect to the appropriate scope of patent coverage of software, such an extension would convert a narrow exception into a violation of comity and international treaties. The decision should be reversed.

CONCLUSION

FICPI urges the Court to vacate the Order of the Federal Circuit and remand for further proceedings.

Dated: December 14, 2006 Respectfully submitted,

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORPORATION,

Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF *AMICUS CURIAE* THE HOUSTON INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

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QUESTION PRESENTED

The amicus curiae will address the following question:

1. Whether digital software code—an intangible sequence of "1's" and "0's"—may be considered a "component[] of a patent invention" within the meaning of section 271(f)(1); and if so,

2. Whether copies of such a "component[]" made in a foreign country are "supplie[d] . . . from the United States."

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INTERESTS OF THE AMICUS CURIAE

The Houston Intellectual Property Law Association (HIPLA) is an association of over 400 lawyers and other professionals who work in the Houston, Texas area.[1] The practice of most of the HIPLA membership relates in substantial part to the field of intellectual property law. Founded in 1961, HIPLA is one of the largest associations of intellectual property practitioners. No HIPLA member has served as record counsel to any party in the subject of this appeal.

HIPLA members often are called upon to advise their clients in matters involving the statute at issue in this case, 35 U.S.C. § 271(f). HIPLA believes that the Federal Circuit correctly determined that the term "component" in section 271(f) is properly read to include "software." However, the other holding by the Federal Circuit in this case, that the term "supplying" in section 271(f) is properly read, for software cases only, to include "copying," is a holding that HIPLA believes to be erroneous.

Section 271(f) is a statutory provision of great consequence to many clients of HIPLA members. These clients depend upon HIPLA members for reliable advice in determining whether current or prospective activities will or will not run afoul of the statute. Because the Federal Circuit's holding that software constitutes a component within the meaning of section 271(f) is a natural reading of the statute

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[1] No counsel for a party authored this brief in whole or in part, and no person or entity other than *amicus curiae*, its members or counsel, has made a monetary contribution to the preparation or submission of this brief.

and legislative history, this amicus respectfully requests this Court to affirm such holding. Because the Federal Circuit's holding that "supplying" software under section 271(f) includes copying is a strained reading of the statute and legislative history, and requires the creation of an unwarranted special exception in software cases, this amicus respectfully requests this Court to reverse such holding.

BACKGROUND

Microsoft creates and tests in the United States certain software related to digitally encoding and compressing recorded speech. *AT&T Corp. v. Microsoft Corp.*, 2004 WL 406640 at *1, 71 U.S.P.Q.2d 1118 (S.D.N.Y. 2004). Microsoft distributes this software by first inscribing it on a "golden disk" in the United States. *Id.* This golden disk is then sent to a foreign country where foreign original equipment manufacturers replicate the code, and load the replicated code onto foreign-assembled computers, which are then sold to consumers. *Id.* While the golden disk is created in and shipped from the United States, all other steps described above take place outside the United States. *Id.* The software on the golden disk is never directly incorporated into its ultimate consumer's computer system, but is always first replicated outside the United States from the golden disk and the replicated code transferred to the foreign-assembled computer. *Id.*[2]

AT&T's patent, RE 32,580, has claims drawn to "a speech processor" and an "[a]pparatus for encoding a speech pattern." *See, e.g.*, RE 32,580 (claims 11 and 24). In

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[2] Alternatively, rather than ship a "golden disk," the transfer is accomplished via electronic transmission. *Id.*

general, these claims include computer hardware on which software is loaded that enables the hardware to encode speech patterns. *Id.*[3] On June 4, 2001, AT&T filed suit against Microsoft, alleging that certain of Microsoft's products containing "speech codecs"—software programs—infringed AT&T's patent. *Id.* at *1 & n.1.

At trial, the parties stipulated to infringement of the apparatus claims for sales in the United States under 35 U.S.C. §§ 271(a) and (b).*AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1368 (Fed. Cir. 1995). The issue addressed by the trial court and now on appeal is whether Microsoft should be liable for sales in foreign countries under 35 U.S.C. § 271(f). The trial court and the Federal Circuit both found liability under section 271(f) for Microsoft's foreign activities. According to the Federal Circuit, software constitutes a "component" under section 271(f) and "[g]iven the nature of the technology, the 'supplying' of software commonly involves generating a copy." *AT&T*, 414 F.3d at 1370. Based on this interpretation, the Federal Circuit found that copying was subsumed in "supplying" for purposes of section 271(f)(1) and liability attached to all of Microsoft's computer systems created and sold outside of the United States. According to the majority of the panel, "[t]o decide otherwise would emasculate 271(f) for software inventions." *Id.* at n.2.

SUMMARY OF ARGUMENT

With regard to the first question presented, HIPLA agrees with the district court and the Federal Circuit that software

[3] RE32580 also has method claims that are not at issue in this appeal.

does constitute a component under section 271(f). This result follows naturally from the statutory text and legislative history, neither of which contain any suggestion that "component" should be limited by technology so as to exclude software. Moreover, the arguments raised by Microsoft in its briefing to the Federal Circuit do not justify the judicial carve-out of an exception for software.

However, with regard to the second question presented, HIPLA believes that "supplying" under section 271(f) does not include copying, and Microsoft should not be liable under section 271(f) for its overseas copying of golden disks containing software loaded onto those disks in the United States. Just as software should be treated the same as other elements when determining whether it is a "component" under section 271(f), so should software be treated when determining whether it has been "supplied" within the meaning of the statute. The Federal Circuit's decision to read "supplying" to include "copying," exclusively for cases involving software, is unsupported by the text of section 271(f) and its legislative history, and also directly conflicts with the Federal Circuit's own precedent. This holding by the Federal Circuit greatly expands the extraterritorial reach of the statute, and ignores viable alternative strategies that companies such as AT&T could pursue to better compete with companies like Microsoft overseas.

ARGUMENT

A. The Federal Circuit's Conclusion that Digital Software Code Constitutes a "Component" Under Section 271(f) is Consistent with the Text and the Legislative History of the Statute, and Should Be Affirmed

The Federal Circuit held that software constitutes a component under section 271(f), noting that the text of the statute does not limit the term "to patented 'machines' or patented 'physical structures.'" *Id.* at 1369 (citing *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005)). Because this holding by the Federal Circuit is consistent with the text and legislative history of the statute, and because Microsoft has shown no justification for a judicially-created exception for software, this Court should affirm the Federal Circuit's holding.

1. Neither Section 271(f) nor its Legislative History Limit the Term "Component" in a Manner that Excludes Software

Neither of the twin prongs of section 271(f) restrict the term "component" so as to exclude software from the meaning of the term. Paragraph (1) of section 271(f) places no limitations on "component", and paragraph (2) limits "component" only in that the "component" be "especially made or especially adapted for use" in the patented invention, and thus "not a staple article or commodity of commerce suitable for substantial noninfringing use. . . ." 35 U.S.C. § 271(f). Nothing in paragraph (2) automatically excludes software from constituting a component of a patented invention. Software can be written for a particular purpose

that falls within the scope of a patented invention, as in this case. Microsoft does not dispute that its object code is especially made for use in its Windows operating system, which was found to infringe AT&T's patent. *AT&T Corp.*, 2004 WL 406640, at *3. Having been written for such purpose, Microsoft's object code—software—is not a staple article or commodity suitable for substantial noninfringing use.

The legislative history of section 271(f) similarly provides no justification for the exclusion of software from the statute's scope. *See* 130 Cong. Rec. 28,073 (1984) (statement of Rep. Kastenmeier). Software is not mentioned in the legislative history, nor does anything in the legislative history evidence an intent by Congress to exclude software from coverage by the statute.

2. None of the Arguments Raised By Microsoft Before the Federal Circuit Justify Excluding Software from the Coverage of Section 271(f)

In its briefing to the Federal Circuit, Microsoft sought to split "software" into two forms—"intangible software information" and "tangible software media." *See* Replacement-Reply Brief for Def.-App. Microsoft Corp. before the Federal Circuit, at 6-7. Having made this distinction, Microsoft then frames the issue for appeal as whether intangible software information qualifies as a component under Section 271(f). *Id.* at 8. Microsoft argues that it cannot, on the grounds that intangible software information constitutes nothing more than a set of instructions, which could even be expressed in a form stored, for example, in the human mind. *Id.* at 7. Microsoft also emphasizes that intangible software information is not separately patentable. *Id.* at 10.

Accepting *arguendo* Microsoft's division of software into tangible and intangible portions, such division does nothing to further Microsoft's argument for an exception from section 271(f). Neither the statutory text nor its brief legislative history make reference to tangibility as a requirement for coverage under the statute. Similarly, despite the emphasis Microsoft places on the non-patentability of intangible software information, protection under section 271(f) is not limited to only those components that themselves could be separately patentable. Put simply, though software information may be intangible and unpatentable by itself, neither of these attributes bars it from constituting a "component" under section 271(f).

Microsoft's attempt to liken intangible software information to a set of instructions, or a pattern for a key for a lock, a pattern for a tire mold, or a pattern for a circuit chip, *id.* at 11, disguises the critical difference separating software from all of these comparators: software is capable of becoming incorporated (*i.e.*, stored) within a patented product, whereas the others cannot. A keymaker, for example, can lay a paper set of instructions next to his machinery while creating the key, but the paper cannot become incorporated within the key. The pattern depicted on the paper set of instructions, or the tire mold, subsequently may be *illustrated* by the appearance of the key, or the outer surface of the tire, when the key or tire are created so as to resemble the pattern depicted on the paper or the mold, respectively, but neither the paper nor the mold have become *incorporated* within the object they were used to create. In contrast, intangible software information, unique among all the foregoing examples, is capable of becoming incorporated within a patented computer product.

Indeed, Microsoft's treatment of the *Berhart* case supports this conclusion. *Id.* at 12 (citing *In re Berhart*, 417 F.2d 1395 (C.C.P.A. 1969)). Microsoft acknowledges without argument *Berhart*'s recognition that a programmed computer "is physically different from the machine without that program." *Id.* (citing *Berhart* at 1400). This difference arises because the programming of a computer using intangible software information rearranges its memory elements. *Id.* Though Microsoft emphasizes that "no molecules are added or subtracted during the programming process," it agrees that the computer is "physically changed" by the incorporation of the software. *Id.* Whether the physical change involves a numerical difference in the number of molecules incorporated within the product is unlikely to have been a concern of Congress, and does not justify creating an exception from section 271(f) for software.

Whether in tangible or intangible form, software is capable of becoming incorporated into a patented product, and thus is capable of being a component of a patented product so as to qualify for protection under section 271(f). This Court should affirm the Federal Circuit's holding that software constitutes a component within the meaning of section 271(f).

B. The Federal Circuit's Reading of "Supplied" to Include "Copying" is Strained, Unsupported by Section 271(f), and Should Be Reversed

Section 271(f) was enacted to "prevent copiers from avoiding U.S. patents by supplying components of patented products in this country so that the assembly of the components may be completed abroad" and responded

"to the United States Supreme Court decision in *Deepsouth Packing Co. v. Laitram Corp.*, concerning the need for a legislative solution to close a loophole in patent law." 130 Cong. Rec. 28,073 (1984) (statement of Rep. Kastenmeier) (citation omitted). There is no specific discussion of the meaning of "supplying," except as is implied by the *Deepsouth* case.

In *Deepsouth*, this Court considered a defendant who manufactured all of the parts of a shrimp-deveining machine in the United States that would have infringed the plaintiff's patent had it been assembled in the United States. *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 523-24 (1972). Instead, the defendant intended to ship all of the parts of the machine outside the United States for assembly and use there by foreign buyers. *Id.* at 523. Assembly was so minor as to take less than an hour once all the parts were received. *Id.* at 524. In *Deepsouth*, the components that were manufactured in the United States were those that were assembled into a device that fell within the claims of the patent. *Id.* at 523. However, because there was no direct infringement in the United States, this Court declined to find liability in the absence of Congressional directive. *Id.* at 526-27 & 532.

In contrast to the *Deepsouth* case, in this case, the component that is shipped from the United States is never combined into an apparatus that falls within the scope of the claims. The golden disk is not combined into the apparatus, nor is the software that is on the disk ever loaded onto the apparatus. The Federal Circuit found liability for this operation by redefining, for software only, "supplying" to include a manufacturing operation that operates wholly outside of the United States, deciding that "copying" should

be included within the definition of "supplying." *AT&T*, 414 F.3d at 1370.

If the component manufactured in the United States and shipped to a foreign country for combination in the claimed invention had been a special type of bolt and that prototype bolt had been copied millions of times outside of the United States for inclusion in machines that fell within the claims, the Federal Circuit would have not found infringement of the patent claims.[4] Yet, aside from the ease of copying software, the Federal Circuit does not provide any reason why software should be treated differently from other components. Nothing in the statute implies that for software, "copying" should be included in "supplying," nor is any such indication found in the legislative history.

The Federal Circuit's own precedent is to the contrary. In *Eolas Techs. Inc. v. Microsoft Corp.*, the Federal Circuit found that "sound policy again counsels against varying the definition of 'component of a patented' invention according to the particular form of the part under consideration []." 399 F.3d 1325, 1339-40. No sound reason exists to require that software should be treated the same as other elements when determining whether it is a "component" under section 271(f), and differently when determining whether it has been "supplied." The Federal Circuit's reasoning in the *Eolas* case was sound that software should be treated equally with all other components under section 271(f).

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[4] "Accordingly, for *software* "components," the act of copying is subsumed in the act of "supplying," such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." *AT&T*, 414 F.3d at 1370 (emphasis added).

As argued by the dissent, the majority's reasoning does not support reading "copying" into "supplying," even for software:

> To the contrary, copying and supplying are separate acts with different consequences—particularly when the "supplying" occurs in the United States and the copying occurs in Düsseldorf or Tokyo. As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the components, regardless of whether the components supplied are physical parts of intangible software.

AT&T, 414 F.3d at 1373 (Rader, J., dissenting). It would no doubt surprise a software manufacturer to learn that by "supplying" a single copy of software to one of his customers he was in fact also allowing that customer to copy the software for use on many other machines.[5]

By expanding the scope of "supplying" to include copying, the Federal Circuit greatly extends the extraterritorial reach of section 271(f). With physical components, the manufacture is largely within the United States and the infringing act, that of shipping the items

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[5] Had Microsoft chosen to stream its software electronically and directly onto its ultimate customers' computers, the Federal Circuit's decision result may very well have been the correct one. In such a case, the software component would have been supplied from the United States for incorporation into a machine that would infringe the patent claims, had it been assembled in the United States. Microsoft did not choose such a method of supplying its software to its foreign customers and so does not fall within section 271(f).

abroad, takes place within the United States. By including copying within "supplying," the Federal Circuit includes in the infringing act an entire manufacturing operation that takes places wholly outside of the United States. Congress has not evidenced an intent to capture such activities.

"Supplying," as used in the context of section 271(f) means what would be expected from a fair reading of the *Deepsouth* case and the congressional response – the component that originates in the United States is incorporated into a product that falls within the scope of the claims. Manufacturing processes that occur outside the United States do not fall within the definition of "supplying."

The Federal Circuit's fear of "emasculating" the statute for software inventions is an ill-founded one. Many options exist in drafting claims for software. For instance, software developers have the option of drafting patent claims to computer programs fixed in a tangible medium, such as the golden disks used by Microsoft. The use of such claims would protect the patentee from the unauthorized manufacture in and shipment from the United States of software on "golden disks," as these unauthorized activities would be covered by section 271(a).[6] It is unnecessary to stretch the definition of "supplying" to encompass acts wholly outside of the United States to accommodate claim-drafting decisions by a patentee.

This Court should reject any expansion of the scope of section 271(f) beyond that specifically covered by the statute.

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[6] These claims are termed "Beauregard claims", based on the case in which they were first allowed. *See In re Beauregard*, 287 F.3d 1583 (Fed. Cir. 1995).

No special "software" scope expansion has been mandated by Congress and no sound reason exists for this Court to include one.

CONCLUSION

HIPLA respectfully requests that this Court affirm the Federal Circuit's holding that software constitutes a component within the meaning of section 271(f), and reverse the Federal Circuit's holding that "supplying" software under section 271(f) includes copying.

Respectfully submitted,

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IN THE

Supreme Court of the United States

OCTOBER TERM, 2006

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF INTEL CORPORATION AS *AMICUS CURIAE* IN SUPPORT OF PETITIONER

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STATEMENT OF INTEREST[1]

Intel develops and produces chips, boards, systems and software building blocks that are integral to computers and communications products. Intel is well known as the world's largest semiconductor manufacturer, but it also develops and distributes a wide range of software for use with its hardware designs. For example, Intel designs drivers, firmware and utilities that interact with Intel chips and third-party operating systems. Intel also produces a variety of compilers and tools for software development and analysis.

Intel's research, development and manufacturing operations take place around the globe. As a result, Intel regularly designs chips and programs in this country for manufacture and distribution worldwide. Intel likewise designs chips and programs abroad for manufacture and distribution in this country. Intel thus has a strong interest in the legal standards governing liability under U.S. patent law for product development and marketing activities that cross national boundaries.

Intel is a strong believer in protection of intellectual property in general and patents in particular. It invests billions of dollars each year in research and development, and it is regularly ranked among this country's top patentees. Nevertheless, Intel believes

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[1] Intel submits this brief pursuant to the written consent of the parties, as reflected in letters the parties have filed with the Clerk. No party or counsel for a party has authored this brief in whole or in part, and no person or entity other than Intel has made a financial contribution to its preparation or submission.

that the decision below is an unwarranted expansion of U.S. patent law and patent rights.

According to the Federal Circuit, copies of software code that are made and sold in foreign countries can infringe under U.S. patent law simply because the original master version of the code was developed in and shipped from this country. As a result, U.S. patentees can now claim damages based on worldwide sales regardless of whether their inventions were patented or even patentable abroad. As discussed below, Intel believes that this result is bad law and even worse public policy.

SUMMARY OF ARGUMENT

1. The plain language of 35 U.S.C. § 271(f) is limited to the "suppl[y]" from this country of "components" where "such components" *themselves* are intended to be incorporated abroad into a combination claimed in a U.S. patent. As the Federal Circuit and AT&T have recognized, Section 271(f) does not cover the exportation of design tools or design information such as templates, masks, molds and prototypes, and it does not impose liability merely for facilitating foreign combinations. Exportation of master versions of program code cannot infringe because master versions are designed to be templates for making additional copies, and only subsequent generation copies are incorporated into computer system combinations that could practice AT&T's invention.

The Federal Circuit's overbroad construction flowed from its mistake in construing "component" and "supplied" sequentially and in isolation, rather than in tandem and in conjunction with the requirement of a "combination." The only "components" that

matter are those "supplied" from this country that become part of a "combination," and the only "supply" that matters is of items that themselves become "components" of the patented "combination." Regardless of whether other forms of software may qualify as a "component" of a patented invention, the master versions at issue here cannot violate Section 271(f) because they themselves are not and are not intended to be combined into computer systems that practice AT&T's patent.

The Federal Circuit extended liability to foreign-made copies by reasoning that "copying is subsumed in the act of supplying" the master versions. That assumption runs counter to two fundamental principles of intellectual property law. First, designs and concepts are distinct from their physical embodiments. Microsoft's product designs for its Windows® operating system are thus distinct from the disks or files that embody them. Second, original works are distinct from later copies, which in turn are distinct from other copies of the same work. The master files cannot be conflated with foreign-made copies.

2. Even if the Federal Circuit's broad reading of Section 271(f) were plausible, it is not the only plausible reading, and well-established canons of construction and important policy considerations counsel against it.

This Court has long presumed that U.S. patent laws do not apply extraterritorially, and it has required clear and certain signals from Congress before imposing liability under U.S. law for acts taken abroad. Nothing in the text or minimal legislative history of Section 271(f) suggests that Congress intended to extend U.S. patent liability to the domestic

design of parts that would be made and sold abroad. Congress merely filled a loophole by which U.S. manufacturers could evade U.S. liability by shipping machine parts abroad for final assembly rather than completing the assembly here. The Court should apply Section 271(f) as written. If Congress perceives an additional loophole, it can legislate an additional solution. This Court should not legislate instead.

Concerns for international comity also should caution the Court against expanding Section 271(f) to cover foreign-made components absent clear congressional instruction. Nations are entitled to adopt their own intellectual property laws, and other countries are more restrictive than the U.S. in patenting software-related inventions. By imposing U.S. liability for worldwide use, the decision below would effectively impose U.S. patent law on the rest of the world, even in countries where the U.S. patentee did not or could not obtain foreign patent protection. In some cases, like this one, the patentee may hold foreign patents. Even then, however, the scope of foreign coverage often varies, and in any event U.S. law should not threaten duplicative liability.

Finally, the construction urged by AT&T would disadvantage American software companies and encourage them to relocate abroad. Under the decision below, U.S. software companies face damages (potentially treble damages) in U.S. courts for their worldwide sales solely because they design software from the U.S. In contrast, foreign software companies would be subject to U.S. law only as to copies of their products made or sold in this country. The ramifications are impossible to predict with certainty, but one thing is certain: the political branches are better

situated to weigh the difficult political and policy considerations inherent in extending U.S. patent liability as AT&T proposes.

ARGUMENT

I. By Its Terms, 35 U.S.C. § 271(f) Is Limited to the Exportation of Components that *Themselves* Will Be Assembled Abroad into a Patented Combination

The question formally presented in this case is whether copies of software object code that were made abroad can qualify as "components" that have been "supplied" from this country in violation of 35 U.S.C. § 271(f). The practical issue for litigants is whether patentees may claim damages under American law based on sales and use of software products throughout the world simply because the original master version of the code was developed in and shipped from this country.

Intel submits that under the plain language of 35 U.S.C. § 271(f) the answer to both questions is *no*.

A. Section 271(f) Does Not Cover Exportation of Master Disks, Prototypes and Templates that Merely Enable Foreign Production of Invention Components

Section 271(f) is expressly limited to the exportation of components that themselves will be incorporated abroad into a combination claimed in a U.S. patent. By its terms, the statute merely prohibits supplying components of an invention from this country in order to induce the combination of *such*

components abroad in a manner that practices a U.S. patent:

> Whoever without authority supplies or causes to be supplied in or from the United States all or a substantial portion of the components of a patented invention, where *such components* are uncombined in whole or in part, in such manner as to actively induce the combination of *such components* outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f)(1) (emphasis added). Congress's selection of the words "such components" made clear that infringement under U.S. law can occur only if the specific items exported from this country are the components intended to be incorporated into the patented combination. Indeed, Congress used the phrase "such components" twice, once to make clear that the components must be supplied from this country in uncombined form, and once to emphasize that those very components must form part of the "combination" that will be completed abroad.[2]

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[2] Section 271(f)(2) is not at issue in this case, but it likewise uses "such component" terminology to stress that the exported components covered by the statute must themselves form part of the foreign-made combination:

> Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfring-

Section 271(f) thus does *not* cover the exportation of design tools or design information (e.g., templates, molds, masks and prototypes) that may be used abroad to manufacture components of a patented invention. The Federal Circuit itself has recognized that such exports are a level removed from the ambit of Section 271(f) and that mere facilitation of foreign combinations is not enough to infringe. *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (2004). As that court put it, Section 271(f) "applies only where components of a patent[ed] invention are physically present in the United States and then either sold or exported." *Id.* at 1117. The statute "clearly refers to physical supply of components [from this country], not simply to the supply of instructions or corporate oversight." *Id.* at 1118.

As an illustration, assume that a "widget" is an important component of a patented "gadget." If an American company exports 100 widgets to a German manufacturer that then incorporates them into 100 gadgets, the American company may have committed 100 acts of infringement under Section 271(f). On the other hand, if the American company exports one widget as a prototype and the German manufacturer creates 100 duplicate widgets using that prototype and incorporates them into 100 gadgets, there is no infringement under U.S. law because the one widget

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> ing use, where *such component* is uncombined in whole or in part, knowing that *such component* is so made or adapted and intending that *such component* will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f)(2) (emphasis added).

exported from this country was not intended to become part of a patented gadget. The patentee's remedy, if any, is under German patent law, not American law.

Even AT&T appears to accept the limited scope of Section 271(f). Recognizing that the exporter must intend that the "component" "supplied" from this country itself become part of the patented "combination," AT&T argues that Microsoft "suppl[ies] the actual software that will itself be 'combined' with devices that would infringe patents if manufactured in the United States." [Resp. to U.S. Br. 5] The problem with that position is that it contradicts the stipulated facts.

Microsoft supplies original object-code versions of its Windows operating system to foreign computer manufacturers in the form of "golden master disks" or encrypted electronic files. It was undisputed, however, that the exported master versions are not *themselves* intended for incorporation into computer systems that are made, used or sold in other nations. Rather, the exported master versions serve as templates for making *additional* copies, and only those subsequent copies (or, more likely, copies of those copies) are incorporated into computer systems that ultimately could practice AT&T's claimed invention. [*See* Pet. App. 45a-46a, ¶¶ 4-7]

Because the master disks and files that Microsoft supplies from the United States are not themselves combined into a system covered by AT&T's U.S. patent, Section 271(f) does not apply by its terms. As Judge Rader put it in dissent below, "[a]s a matter of logic, one cannot supply one hundred components of a patented invention without first making one

hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software." *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1373 (2005) (Rader, J., dissenting).

If AT&T obtained foreign counterpart patents and if foreign-made computer systems infringe those foreign patents, then AT&T may have a remedy under foreign patent law. American patent law, however, does not extend that far. *See id.* at 1376 (Rader, J., dissenting) ("AT & T can protect its foreign markets from foreign competitors by obtaining and enforcing foreign patents. . . . Section 271(f) does not . . . protect foreign markets from foreign competitors.").

B. AT&T and the Federal Circuit Have Erred in Defining "Component" and "Supply" Separately and Abstractly, Rather than in Tandem and in Context

The Federal Circuit's overly broad reading of Section 271(f) stemmed in part from the historical accident of how the issues were presented to it.

In *Eolas Technologies Inc. v. Microsoft Corp.*, 399 F.3d 1325 (2005), the Federal Circuit decided a host of other issues before reaching Section 271(f). Moreover, when finally reaching Section 271(f), the court merely decided the abstract issue of whether software code exported abroad can qualify as a "component" of a patented invention. *Id.* at 1338-41 (holding that it can).

Then, in this case, the Federal Circuit took *Eolas*'s construction of "component" as a given and limited its consideration to whether "software replicated abroad from a master version exported from

the United States . . . may be deemed 'supplied' from the United States for the purposes of § 271(f)." 414 F.3d at 1369. The majority held that the copies could be deemed "supplied" from this country because "the act of copying is subsumed in the act of 'supplying.'" *Id.* at 1370.

AT&T now urges this Court to follow the same tack: to hold that "components" of patented inventions are not limited to tangible things and then to rule that a broad construction of "supplied" necessarily follows from that premise. *See* Resp. to U.S. Br. 2-5 (arguing that "The Solicitor General's Answer To The First Question Presented Compels The Federal Circuit's Answer To The Second"). In Intel's view, this approach of determining the meaning of individual words of the statute in isolation is misguided and biased toward an overbroad construction that Section 271(f) as a whole cannot bear.

Rather than construing "component" and "supplied" sequentially and in the abstract, the Court should construe them in their statutory context—*together*. Section 271(f) refers to "suppl[ying]" from the U.S. "components" of a patented invention that will be combined abroad in a manner that would infringe if the combination occurred domestically. The only "components" that matter are those that have been directly "supplied" from this country for use in a patented combination. Likewise, the only "supply" that matters is that of items that themselves become "components" of the patented combination. The two issues are inseparable.

As a result, this Court need not decide whether or when all the various forms of "software" may qualify as a "component" for purposes of Section 271(f). In

this case, Microsoft "supplied" only master versions of Windows from this country. Those master versions were not "components" of AT&T's patented invention because they themselves were not intended to be combined with hardware to form a computer system capable of practicing AT&T's patent.

C. The Suggestion that "Copying Is Subsumed in the Act of Supplying" Ignores Critical Distinctions Between Software Designs and Their Physical Embodiments and Between Original Works and Later Copies

The Federal Circuit recognized that the copies of Windows code installed on foreign-made computers are actually made abroad by replicating the master versions. 414 F.3d at 1368-69. Indeed, the panel majority tacitly acknowledged that Section 271(f) did not literally apply. *See id.* at 1370 ("All . . . resulting copies have *essentially* been supplied from the United States.") (emphasis added); *see also id.* at 1369 (asking whether copies should be "deemed" supplied from the U.S.). Nevertheless, the Federal Circuit held Microsoft liable for its worldwide sales on the theory that "the act of copying is subsumed in the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies." *Id.* at 1370.

In holding that supplying the original master code is equivalent to supplying copies later made from that code, the Federal Circuit ignored two fundamental distinctions long recognized in intellectual property law.

First, designs and concepts are distinct from their physical embodiments. Copyright law, for example, distinguishes between "works of authorship" and the "tangible medi[a] of expression" in which they are fixed. *See* 17 U.S.C. § 102. For its part, patent law distinguishes between conceptions and reductions to practice. *See* 35 U.S.C. § 102(g).

Here, Microsoft may have supplied the features of Windows in the sense that Microsoft conceived those ideas and expressed them in computer programs, but that is not the sense in which 35 U.S.C. § 271(f) uses the word "supplied." Section 271(f) plainly refers to the provision of actual, concrete embodiments ("components") that will be incorporated into a patented combination. In this case, the master versions supplied from this country were not designed to be and were not incorporated into computer systems, and the copies that were incorporated into computer systems were undisputedly foreign-made.

Second, original works are analytically distinct from later-generation copies, and each copy is likewise distinct from other copies of the same work. Under the "first sale" doctrine of copyright law, for example, the lawful owner of a particular copy or phonorecord is entitled to use, sell or otherwise dispose of that particular copy or phonorecord. 17 U.S.C. § 109. That owner is not, however, entitled to make additional copies or derivative works. *See* 17 U.S.C. § 106(1) & (2). This Court has recognized a similar distinction in patent law. A patentee's initial sale of a particular patented article generally exhausts its rights to collect royalties on that article. *United States v. Univis Lens Co.*, 316 U.S. 241, 249-52 (1942). The patentee nevertheless maintains the

exclusive right to make, use and sell other products that practice the patent. *See* 35 U.S.C. § 271(a).

Here too, the master versions of Microsoft's Windows code are physically, analytically and legally distinct from later copies of that code. The master versions themselves are not designed to be combined with hardware components. They are intended only to be templates for replication, and only the subsequent-generation, foreign-made copies are actually installed into computer systems. Microsoft may have facilitated such foreign combinations, but as *Pellegrini* properly recognized and as AT&T concedes, that is not enough to trigger extraterritorial liability under Section 271(f). AT&T's remedy, if any, lies with foreign patent law. *See Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 531 (1972) ("To the degree that the inventor needs protection in markets other than those of this country, the wording of 35 U. S. C. §§ 154 and 271 reveals a congressional intent to have him seek it abroad through patents secured in countries where his goods are being used.").

II. The Court Should Not Strain to Expand the Scope of Section 271(f)

The Federal Circuit strained to construe Section 271(f) beyond its literal scope, suggesting that policy reasons and congressional intent supported a broad reading. Even if the Federal Circuit's construction were a plausible reading of the statute, it is not the only plausible reading, and well-established canons of statutory construction and important policy considerations both favor a *narrow* interpretation.

A. This Court Has Consistently Refused to Extend the Reach of U.S. Patent Laws Abroad Absent Clear Congressional Authorization

This Court has long presumed that U.S. patent laws do not apply extraterritorially, absent a clear congressional directive to the contrary. *See, e.g., Brown v. Duchesne,* 60 U.S. 183, 195 (1856) (U.S. patent did not cover improvements to ships fitted in foreign ports, even when such ships entered American ports; "these acts of Congress do not, and were not intended to, operate beyond the limits of the United States"); *Dowagiac Mfg. Co. v. Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915) (sales of drills in Canada did not infringe U.S. patent; "[t]he right conferred by a patent under our law is confined to the United States and its territories"); *Deepsouth,* 406 U.S. at 527 (shrimp deveining machine did not infringe where entire machine was not assembled domestically; "it is not an infringement to make or use a patented product outside of the United States"). The Court accordingly requires a "clear and certain signal" from Congress before extending U.S. patent liability to conduct abroad. *Deepsouth,* 406 U.S. at 530-31.

There was no such signal here. In adopting Section 271(f), Congress intended to address the *Deepsouth* decision under which a U.S. manufacturer evaded U.S. patent liability simply by having the final assembly of U.S.-made machine parts take place abroad. Nothing in the text of Section 271(f) or its minimal legislative history suggests, however, that Congress intended to impose U.S. patent liability for merely *designing* parts that would later be

made and sold abroad. The legislative history indicates only that Congress intended to provide "a legislative solution to close a loophole in patent law"—to "prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad." *Patent Law Amendments of 1984,* 1984 U.S. CODE CONG. & ADMIN. NEWS 5827, 5828.

The Federal Circuit viewed the loophole-closing nature of Section 271(f) as a mandate to construe it more broadly than its literal language covers. In particular, the Federal Circuit strove not to "permit[] a technical avoidance of the statute by ignoring the advances in a field of technology . . . that developed after the enactment of § 271(f)." 414 F.3d at 1371. That analysis, however, contradicts this Court's repeated admonition that it is up to Congress, not the courts, to extend the territorial scope of U.S. patent law to address modern developments in technology and international trade. For 150 years, this Court has held that the courts must avoid "strain[ing] by technical constructions to reach cases which Congress evidently could not have contemplated." *Brown,* 60 U.S. at 197.[3]

Ultimately, the Federal Circuit failed to heed the lesson of *Deepsouth.* The process there worked. The Court's decision properly construed Section 271(a) as it was written, rather than broadening it by judicial

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[3] To the extent that Congress *did* contemplate exportation of master disks back in 1984, that merely confirms the flaw in the Federal Circuit's statutory construction. Nothing in the language or legislative history of Section 271(f) suggests that Congress was concerned about such exportation.

fiat. The Court instead invited Congress to reexamine the statute. Congress did, detected a loophole, and enacted Section 271(f) to fill it. In this case, this Court again should construe Section 271(f) as written and originally intended and understood. If Congress thinks modern technology has opened further loopholes, then Congress can step in and fill them. The Court should not assume a legislative role itself.

B. Awarding U.S.-Law Damages Based on Worldwide Sales Would Raise Serious International Comity Concerns

International comity considerations also caution against expanding Section 271(f) to cover foreign-made components. AT&T is correct that "'U.S. intellectual property laws are often more protective than those of other countries.'" [Resp. to U.S. Br. 6 (citation omitted)] But it draws the wrong conclusion from that fact. As this Court explained in *EEOC v. Arabian American Oil Co.*, 499 U.S. 244, 248 (1991), application of legislation beyond the territorial jurisdiction of the United States may lead to "unintended clashes between our laws and those of other nations which could result in international discord." Thus, "this Court ordinarily construes ambiguous statutes to avoid unreasonable interference with the sovereign authority of other nations." *F. Hoffman-La Roche Ltd. v. Empagran S.A.*, 542 U.S. 155, 164 (2004).

By imposing liability for worldwide use, the effect of the decision below is to impose U.S. standards of patentability on the rest of the world—even in countries where the U.S. patentee did not seek patent protection, and even in countries where patent cover-

age would have been statutorily barred. Sovereign nations are entitled to fix their domestic intellectual property laws and policies in the way they see fit and without interference from other sovereigns.

The conflict-of-laws problem is very real because many countries view patentable subject matter more narrowly than this country does. That is particularly so in the realm of software-related inventions. *See generally* Jinseok Park, *Has Patentable Subject Matter Been Expanded? A Comparative Study on Software Patent Practices in the European Patent Office, the United States Patent and Trademark Office and the Japanese Patent Office*, 13 INT'L J.L. & INFO. TECH. 336 (2005).

American courts have taken a relatively broad view of the patentability of such inventions. *See, e.g., In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) (en banc) (computer programmed to carry out a claimed invention held patentable). In contrast, Article 52(2)(c) of the European Patent Convention, specifically forbids patenting computer programs. European courts have struggled to construe that exclusion from patentability, but there is little doubt that "[t]he position is different in Europe from that in the USA." *Aerotel Ltd v. Telco Holdings Ltd*, [2006] EWCA Civ 1371, ¶ 13, 2006 WL 3102401 (also questioning several of the policy assumptions of U.S. law). Japan follows its own, different path. *See* MANUAL FOR THE HANDLING OF APPLICATIONS FOR PATENTS, DESIGNS AND TRADEMARKS THROUGHOUT THE WORLD, "Japan" at 5 (Arnold Siedsma eds. 2006).

The potential for conflict is magnified because American law may authorize treble damages in cir-

cumstances where foreign law would allow no recovery at all. *See* 35 U.S.C. § 284.

When other countries have declined to allow or award patent protection under their laws, American courts should refrain from subverting those decisions by awarding damages under U.S. law based on manufacturing and sales in those countries. At a minimum, this Court should require clear and unmistakable instruction from Congress before holding that U.S. courts may award damages under U.S. law for actions in foreign countries that are perfectly legal in those countries.

The rule should be the same in cases like this one, in which the patentee has secured patent protection in some foreign jurisdictions. To begin with, the patentee may not have obtained coverage worldwide. Moreover, the breadth of foreign patent claims often differs from that of U.S. patent claims: the claim language, the patentee's written description of the invention in the specification, and its representations to patent office examiners during prosecution all can and frequently do differ. The problem of international conflict is thus virtually unavoidable.

In any event, where foreign patent coverage does exist, there is no need for U.S. law to provide an additional remedy. Authorizing liability under both U.S. and foreign law would only raise the specter of duplicative liability and double recovery. Once again, unless and until Congress clearly dictates otherwise, the soundest approach is to leave it to other nations to determine liability and remedies for any patent infringement that may have occurred within their borders.

C. AT&T's Construction of Section 271(f) Would Put American Companies at a Disadvantage and Encourage Them to Move Design Activities Abroad

Expansion of Section 271(f) to cover the exportation of master versions of software code ultimately would backfire by disadvantaging American software companies and encouraging them to relocate their design activities abroad.

Consider two software companies, one American-based and one European-based, both of which are accused of infringing a U.S. patent. Under the Federal Circuit's construction of Section 271(f), the American company may be liable for damages based on worldwide use because it "supplied" a "component" from the U.S. The potential liability of the European company, in contrast, would be just a fraction of that amount because the damages base would be limited to usage within this country.

Over the long run, that asymmetry would encourage U.S. software companies to design their products and write their code abroad. It is no answer to say that software companies should simply avoid infringing others' patents. Of course they should try, but as a practical matter, the thicket of software-related patents is dense, and it is hard to predict how broadly they will be construed. As a result, virtually every significant high technology company is likely to face patent infringement allegations. Companies are already moving software design activities offshore for economic reasons, and American courts should not worsen the situation by placing U.S. software designers at a competitive disadvantage.

No one knows for sure what will happen if this Court affirms the decision below: we are treading in uncharted waters. One thing is certain, however: Congress and the President are far better equipped than the courts to weigh the difficult policy issues involved in expanding Section 271(f). AT&T itself agrees that "Congress, not the Judiciary, should resolve the complex current debate about the net effect of Section 271(f) on U.S. economic interests." [Resp. to U.S. Br. 1] The proper disposition in this case is thus to limit the scope of Section 271(f) to its plain language and leave it to the political branches to tackle the difficult international political and policy issues that would arise if U.S. patent liability were extended as AT&T proposes.

CONCLUSION

The judgment below should be reversed.

Respectfully submitted,

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AT&T CORP.,
Respondent.

ON WRIT OF CERTIORARI TO THE
UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

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AMICUS CURIAE BRIEF OF THE AMERICAN INTELLECTUAL PROPERTY LAW ASSOCIATION IN SUPPORT OF NEITHER PARTY

This brief is submitted by the American Intellectual Property Law Association ("AIPLA") as amicus curiae in support of neither party to urge the Court to decide that (1) software can be a "component" of a patented invention within the meaning of 35 U.S.C. § 271(f) and (2) the reproduction of software in a foreign country is not "supplying" that software from the United States under 35 U.S.C. § 271(f).

STATEMENT OF INTEREST[1]

The AIPLA has no interest in either party to this litigation and has no stake in the outcome of this case, other than its interest in seeking a correct and consistent interpretation of the patent laws.

AIPLA is a voluntary bar association of over 17,000 members who daily work with patents, trademarks, copyrights, trade secrets, and the legal issues that intellectual property presents. AIPLA's members include attorneys in private and corporate practice and in government service. Through their diverse representation, AIPLA brings a broad perspective and extensive experience to the important issues raised in this case. Because of the diverse interests of AIPLA members and their clients, this Court's decision with

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[1] Consents to file this brief from the counsel of record for all parties are on file with the Clerk of the Court pursuant to Supreme Court Rule 37.3(a). This brief was not authored, in whole or in part, by counsel to a party, and no monetary contribution to the preparation or submission of this brief was made by any person or entity other than AIPLA or its counsel.

regard to the interpretation of section 271(f) may materially impact some of AIPLA's members or their clients.

BACKGROUND

AT&T asserts that computers loaded with Microsoft software infringe – under 35 U.S.C. § 271(f) – claims of United States Reissue Patent No. 32,580 ("the '580 patent"). Section 271(f)(1) states:

> Whoever without authority ***supplies or causes to be supplied*** in or from the United States all or a substantial portion of the ***components of a patented invention***, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f)(1) (emphasis added). The '580 patent includes claims to an apparatus capable of encoding, compressing, and replaying recorded speech. Such claims cover an apparatus or medium loaded with software that performs certain processes.

AT&T alleges that Microsoft is liable under section 271(f) because it exports, via a master disk or an electronic transmission, a single copy of software from the United States intending to replicate it and install the copies on computers abroad. AT&T argues that this exported software is a "component[] of a patented invention" that is "supplied in or from the United States . . . in such manner as to actively induce the combination" of the software with another

component (i.e. a computer) such that the combination would infringe the claims of the '580 patent if it were made in the United States. *See* 35 U.S.C. § 271(f). Microsoft concedes that it infringes the '580 patent when it creates the combination in the United States. However, Microsoft argues that it is not liable under section 271(f) because (1) its exported software code is not a "component[] of a patented invention" and (2) the software copies made abroad are not "supplied in or from the United States."

This Court's interpretation of 35 U.S.C. § 271(f) will resolve this dispute.

SUMMARY OF ARGUMENT

This Court has granted certiorari as to two questions: (1) whether digital software code may be considered a "component[] of a patented invention" within the meaning of section 271(f)(1); and, if so, (2) whether copies of such a component (i.e. software code) made in a foreign country are "supplie[d] ... from the United States" within the meaning of section 271(f)(1).

This Court should affirm the Federal Circuit's interpretation of section 271(f), in accordance with the plain meaning of its text, that software can be a "component[] of a patented invention." The plain language of the statute applies to any part of any patented invention. Although the legislative history shows Congress' intent to impose liability for the supply of parts of a patented machine for foreign assembly, the clear language used in the statute shows a congressional intent to enact a statute with a much broader effect that applies to any patented technology.

However, this Court should reverse the Federal Circuit's expansive interpretation of the phrase "supplies or causes to be supplied in or from the United States" as improperly disregarding the plain language of the statute. This Court should hold that copies of software, made in a foreign country, are not "supplie[d] ... from the United States."

The ordinary meaning of "supply" does not encompass copying. The legislative history supports the ordinary meaning because it focuses on prohibiting foreign ***assembly*** of components and does not indicate that Congress intended section 271(f) to cover acts such as manufacturing or copying that occur on foreign soil. The Federal Circuit erred by ignoring the ordinary meaning of the statute. Instead, the Federal Circuit extended the scope of the statute beyond its text to reflect its view of the way software is generally supplied. In so doing, the Federal Circuit improperly stepped into the role of legislator and rewrote the statutory text to account for the ease of copying software and its desire to effectuate its view of the congressional purpose of the statute.

ARGUMENT

I. SOFTWARE CAN BE A "COMPONENT[] OF A PATENTED INVENTION" WITHIN THE MEANING OF SECTION 271(F)

The Federal Circuit correctly held that software can be a "component[] of a patented invention" and properly rejected Microsoft's arguments that software should be categorically excluded from the scope of section 271(f)(1). Under the only interpretation consistent with the text of the statute, software can be a "component[] of a patented invention."

A. The text of the statute mandates an interpretation of "component[] of a patented invention" that includes software

Courts give words of a statute "their ordinary, contemporary, common meaning, absent an indication that Congress intended them to bear some different import." *Williams v. Taylor*, 529 U.S. 420, 431 (2000) (quotations and citations omitted). Because the statutory language is plain here, "the sole function of the courts – at least where the disposition is not absurd – is to enforce it according to its terms." *Arlington Cent. Sch. Dist. Bd. of Educ. v. Murphy*, __ U.S. ___, 126 S. Ct. 2455, 2459 (2006) (quoting *Hartford Underwriters Ins. Co. v. Union Planters Bank, N. A.*, 530 U.S. 1, 6 (2000)).

To resolve the parties' dispute, this Court needs to interpret the statutory terms "components" and "patented invention." Because the statute does not define these unambiguous terms, each should be given its ordinary meaning in an analysis that begins and ends with the text of section 271(f).

Section 271(f)(1) uses the word "components" three times: "components of a patented invention"; "where such components are uncombined in whole or in part"; and

"actively induce the combination of such components."[2] The statute's usage of "components" suggests a broad meaning because the term does not appear with limiting or modifying words. In addition, the context shows that a "component" is something combinable with other things to form a patented invention, which broadly applies to any technology.

This Court also uses dictionaries to determine the ordinary meaning of words in a statute. *E.g.*, *Williams v. Taylor*, 529 U.S. 420, 431 (2000); *Walters v. Metro. Educ. Enters.*, 519 U.S. 202, 207-08 (1997). Dictionaries define "component" as "part of a mechanical or electrical complex" *American Heritage Dictionary* 302 (2d coll. ed. 1991), "discrete part of a larger system or structure" or "individual modular software routine that has been compiled and dynamically linked, and is ready to use with other components or programs" *Microsoft Computer Dictionary* 116 (5th ed. 2002), and "a constituent part; element; ingredient" *The Random House Dictionary of the English Language* 419 (2d ed. 1987). The dictionary meanings therefore indicate that a component is a part or constituent of some larger item.

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[2] Section 271(f)(2) uses the term "component" three times in a context nearly identical to that in Section 271(f)(1):

> Whoever without authority supplies or causes to be supplied in or from the United States any component of a patented invention that is especially made or especially adapted for use in the invention and not a staple article or commodity of commerce suitable for substantial noninfringing use, where such component is uncombined in whole or in part, knowing that such component is so made or adapted and intending that such component will be combined outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

Moreover, the statute's use of the term "component" in sections 271(c) and 271(g) is consistent with that meaning. Section 271(c) states that one may contributorily infringe a patent by selling a "component" that "constitute[es] a material *part* of the invention." 35 U.S.C. § 271(c) (emphasis added). Section 271(g)(2) states that one will not be liable for, *inter alia*, importing certain products if the product "becomes a trivial and nonessential *component* of another product." 35 U.S.C. § 271(g)(2) (emphasis added). Both of these provisions use "component" in a manner consistent with its dictionary definition.

In short, the text of section 271(f), the text of other parts of section 271, and dictionaries all indicate that a "component" is a part of some larger item. The statutory text does not suggest the term "components" has a technological limitation.

Nor is there any technological limitation implied in the phrase "patented invention," which the statute identifies as the intended result of combining the supplied components. Under 35 U.S.C. § 101, the term "invention" includes "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof."[3] It cannot reasonably be disputed that the result of

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[3] The definitional section, 35 U.S.C. § 100, defines "invention" as "invention or discovery."

the foreign combination in this case is a patented invention, given Microsoft's concession of domestic infringement.[4]

Under such an interpretation, software can be a "component[] of a patented invention." Courts have long held that software can be part of a patented invention. *E.g.*, *Diamond v. Diehr*, 450 U.S. 175, 187 (1981). For example, in *In re Alappat*, the Federal Circuit stated: "[A] computer operating pursuant to software may represent patentable subject matter, provided, of course, that the claimed subject matter meets all of the other requirements of Title 35." 33 F.3d 1526, 1545 (Fed. Cir. 1994). There is no dispute that one can load software onto a computer, thereby giving that computer a new ability to perform new and useful processes. Quite clearly, then, the software is a "component" or a "part" of the patented invention.[5]

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[4] The general infringement statute prohibits the unauthorized making, using, selling, offering to sell, or importing of "any patented invention" during the term of the patent. 35 U.S.C. § 271(a). In addition, the use of "patented invention" in this general infringement section suggests that the term has a broad meaning. This is especially so when one looks at the subsections that use more specific terms like "patented machine, manufacture, combination or composition", 35 U.S.C. § 271(c); "patented product", 35 U.S.C. § 271(d)(5); or "process patented", 35 U.S.C. § 271(g).

[5] The components at issue need not be patentable individually; they just must be a part of something that is patentable. For example, in *Deepsouth*, neither component was itself patentable – only the combination was. *See Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 521 (1972).

B. Neither the legislative history, nor any reasonable patent policy compels an interpretation of section 271(f) that excludes software

Where the statutory text is unambiguous, this Court need not consider the legislative history or other extrinsic evidence.[6] But even if this Court finds it necessary to look beyond the statutory text, it will find no congressional intent to limit the application of section 271(f) to mechanical inventions.

In *Deepsouth Packing Co. v. Laitram Corp.*, this Court held that United States patent law did not prohibit a company from exporting unpatented parts, even where the company instructed the buyer to assemble the parts into a machine that, if so assembled in the United States, would infringe a United States patent. 406 U.S. 518, 526-32 (1972). Congress enacted section 271(f) in response to this Court's holding in *Deepsouth*. For example, the legislative history states that section 271(f):

> prevents copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad. This proposal responds to the United States Supreme

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[6] As this Court has "repeatedly held, the authoritative statement is the statutory text, not the legislative history or any other extrinsic material. Extrinsic materials have a role in statutory interpretation only to the extent they shed a reliable light on the enacting Legislature's understanding of otherwise *ambiguous* terms." *Exxon Mobil Corp. v. Allapattah Servs.*, 545 U.S. 546, 125 S. Ct. 2611, 2626 (2005) (emphasis added).

> Court decision in [Deepsouth], concerning the need for a legislative solution to close a loophole in patent law.

Patent Law Amendments Act of 1984, 1984 U.S.C.C.A.N. 5827, 5828. The legislative history also indicates that the President of the United States had a similar view of the statute, stating that section 271(f) closed a loophole and imposed liability even where "final assembly of patent [sic] machines . . . occur[ed] offshore." President's Message to Congress, Signing of Patent Law Amendments Act of 1984, 20 Weekly Comp. Pres. Doc. 45 (Nov. 9, 1984).

The legislative history thus indicates a Congressional intent to close the "loophole" exposed by the *Deepsouth* decision. Congressional intent to close that "loophole" is consistent with an interpretation of section 271(f) that prevents any offshore combination of components in a manner that would infringe a United States patent if done in this country. Nothing in the legislative history indicates that the statute is to be construed narrowly and limited to the facts of that decision.

More importantly, the statutory text completely contradicts such an interpretation. The drafters of section 271(f) employed the broad language "component[] of a patented invention" instead of narrower language, such as "patented product" or "patented machine." Thus, while Congress focused on reversing the result in *Deepsouth*, Congress passed a statute having a much broader effect. This Court has "stated time and again that courts must presume that a legislature says in a statute what it means and means in a statute what it says there." *Arlington*, 126 S. Ct.

at 2459 (quoting *Connecticut Nat'l Bank v. Germain*, 503 U.S. 249, 253-54 (1992)).[7]

A holding that software can be a component of a patented invention within the meaning of section 271(f) will not impose liability on those exporting mere information or instructions. As the Federal Circuit correctly held in *Pelligrini v. Analog Devices, Inc.*, instructions or information are not a component of a patented invention. 375 F.3d 1113, 1118 (Fed. Cir. 2004), *cert. denied*, 543 U.S. 1003 (2004). This decision makes perfect sense, as such instructions or oversight never become a "part" of the patented invention. Rather, such materials merely aid one in making a product. Therefore, even under a broad interpretation of section 271(f), exportation of design information and the like cannot give rise to direct liability.

II. SOFTWARE THAT IS COPIED IN A FOREIGN COUNTRY IS NOT "SUPPLIE[D] ... FROM THE UNITED STATES" WITHIN THE MEANING OF SECTION 271(F)

The Federal Circuit incorrectly held that Microsoft "supplies" innumerable copies of software from the United States by its exportation of a "master disk" of software or its electronic transmission of a copy of software to a foreign

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[7] An interpretation that does not specifically exclude software from the scope of the statute furthers sound patent policy. As one example, pursuant to United States and international law, patent laws apply equally to all technologies. *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005) (citing TRIPS Agreement, Part II, Section 5 (1994) ("Patents shall be available and patent rights enjoyable without discrimination as to . . . the field of technology.")). There is no principled reason for a specific exclusion of software from the ambit of section 271(f).

country. Properly interpreted, section 271(f) does not prohibit the foreign copying of software because such copying does not entail "supplying" in or from the United States.[8]

A. The ordinary meaning of "supplies" does not include copying

The statute does not define the pertinent language, so this Court should give the text its ordinary meaning. *Williams*, 529 U.S. at 431. The dictionary defines "supply" as "to furnish or provide." *Random House Unabridged Dictionary* 1912 (2d ed. 1993); *see also The American Heritage College Dictionary* 1364 (3d ed. 1993) (defining "supply" as "[t]o make available for use; provide" and "[t]o furnish or equip with"). The ordinary meaning of "supplies" or "supplied" is therefore the act of furnishing or providing an article.

Moreover, the statutory text identifies two discrete elements: (1) supply of components from the United States; and (2) active inducement to combine into the patented invention. Thus, section 271(f) imposes liability upon one who "***supplies or causes to be supplied in or from the United States*** all or a substantial portion of the ***components*** of a patented invention . . . in such manner as to actively induce the combination of ***such components*** outside of the United States." 35 U.S.C. § 271(f)(1) (emphasis added).

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[8] Although foreign-made copies of a supplied component trigger no liability, the export of the master disk itself, together with installation (combination) of that software on a single computer, could trigger liability. In such a case, foreign-made copies might be relevant to damages for such a violation. However, AIPLA takes no position on whether such damages would be appropriate here given the current state of the record.

This language suggests that liability will attach only where the supplier made or acquired components in the United States and then exported them with the intention that they be combined into a patented invention.

The Federal Circuit expressly recognized this fact in *Pelligrini*: "[section] 271(f) is clear on its face. It applies only where components of a patent[ed] invention are physically present in the United States and then either sold or exported." *Pelligrini*, 375 F.3d at 1117. Given its plain or "clear" meaning, the statutory text therefore does not prohibit foreign manufacture of components or foreign copying of a component.[9]

The legislative history supports this interpretation. As stated earlier, Congress enacted section 271(f) to correct the defect in United States patent law that permitted the exportation of parts of a patented machine for assembly into a patented machine abroad. *Deepsouth*, 406 U.S. at 527-29; *see also* Patent Law Amendments Act of 1984, 1984 U.S.C.C.A.N. at 5828. According to the Senate Report, Congress intended section 271(f) to prevent the situation where "components are ***supplied for assembly*** abroad to circumvent a patent." S. Rep. No. 663, 98th Cong., 2d Sess. 3 (1984) (emphasis added). The legislative history focused on prohibition of sending components to a foreign country with the intent that they be "assembled" there; nowhere does

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[9] As stated succinctly by the dissenting Judge in the decision below: "As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software. Thus copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying." *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1373 (Fed. Cir. 2005) (Rader, J. dissenting).

it suggest section 271(f) applies to foreign manufacture or copying of parts of a patented invention.

B. The presumption against extraterritorial application of United States law compels a narrow interpretation of section 271(f)

The legal presumption that United States laws do not apply to extraterritorial acts compels a narrow interpretation of "supplies or causes to be supplied." *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) ("[L]egislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States."); *see also F. Hoffmann-La Roche Ltd v. Empagran S.A.*, 542 U.S. 155, 164 (2004) ("[T]his Court ordinarily construes ambiguous statutes to avoid unreasonable interference with the sovereign authority of other nations." (citations omitted)). Congress' enactment of section 271(f) shows an intent to affect activity *directed at* foreign lands, but not an intent to affect acts *on* foreign lands. Congress focused the statute on the *domestic* act of "supplying" components to a foreign country for combination or assembly. 35 U.S.C. § 271(f).

Congress, thus, carefully avoided the imposition of liability for acts that take place on foreign soil (e.g., foreign manufacture or copying of components). *See Waymark Corp. v. Porta Sys. Corp.*, 245 F.3d 1364, 1367-68 (Fed. Cir. 2001) (holding section 271(f)(2) did not require actual assembly of the components because that "requirement would both raise the difficult obstacle of proving infringement in foreign countries and pose the appearance of giving extraterritorial effect to United States patent protection" (quotations omitted)). In extending the statute to cover copying of software on foreign soil, the Federal

Circuit's interpretation fails to avoid the extraterritorial application of United States laws.[10]

C. The Federal Circuit incorrectly extended section 271(f) beyond its text to accommodate special characteristics of software technology

The Federal Circuit's interpretation of "supplies or causes to be supplied in or from the United States" is mistaken. The court erroneously focused on software as a unique technology and gave underdeveloped policy concerns too central a role. In doing so, the court lost sight of the text of the statute.

The Federal Circuit inappropriately interpreted section 271(f) with specific reference to software. Starting with its analysis of the "ordinary meaning" of "supplying" the Federal Circuit focused on its view of the "way software is typically 'supplied.'" *AT&T*, 414 F.3d at 1369. According to the Federal Circuit, "'supplying' software commonly involves generating a copy . . . . Copying, therefore, is part

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[10] *See AT&T*, 414 F.3d at 1373 (Rader, J. dissenting) ("[The majority] extends § 271(f) to cover extraterritorial copying in [foreign countries]. This extraterritorial expansion of U.S. patent law contravenes the precedent of [the Federal Circuit] and the Supreme Court that expressly confines the rights conferred by Title 35 to the United States and its Territories." (citing cases)).

and parcel of software distribution."[11] *Id.* at 1370; *see also id.* ("[F]or software 'components,' the act of copying is subsumed within the act of 'supplying,' such that sending a single copy abroad with the intent that it be replicated invokes § 271(f) liability for those foreign-made copies."). Thus, from the outset of its inquiry the Federal Circuit assumed the "ordinary, contemporary, common meaning" of "supplied" must encompass the copying of software. *See id.* at 1369-70. The Federal Circuit ignored the ordinary meaning of the term by giving it a special meaning as applied to software. Such an approach is improper for a statute of general applicability. Under the Federal Circuit's approach, the "ordinary meaning" of "supply" differs for each technology – for some it encompasses foreign manufacture or copying, presumably for others it does not.

Indeed the Federal Circuit acknowledged the difference between supplying and copying software, and acknowledged that it extended the reach of the statute beyond its text. The Federal Circuit stated that the copies had "*essentially been* supplied from the United States," because "one can *supply* only a single disk that may be replicated . . . instead of *supplying* a separate disk for each copy of the software to be

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[11] Even if it is true that "supplying" of software "commonly involves generating a copy," it simply does not hold that "supplying" must encompass the conduct at issue. Of course one supplies additional units of software by making copies – the alternative is rewriting the program on a different medium every time one wishes to supply an additional unit of software. For example, one could say the supplying of 100 units of software "involves generating a copy" where a company makes 100 copies of the software and then supplies those 100 copies to the retailer. That conduct fits with the ordinary meaning of "supply" as argued *supra*. The issue here is whether one who provides only a single unit of software can be held to have supplied an infinite number of units of software, merely because the software can be replicated.

sold abroad." *AT&T*, 414 F.3d at 1370 (emphasis added). The Federal Circuit thus did not state that Microsoft *supplied* the copies made from its exported golden master disk.[12] Rather, the Federal Circuit determined that Microsoft's conduct was so similar to supplying that it must fall within the statute. The Federal Circuit reasoned that, because software is *easier* to copy than a part of a machine, section 271(f) must encompass that copying. However, the ease of copying of the particular "component[]" is not a principled basis for extending the statute and for imposing potentially enormous liability upon software companies.

The Federal Circuit believed its interpretation furthered its view of "Congress's motivation for enacting § 271(f)." *Id.* at 1371; *see also, e.g.*, *id.* at 1370 n.2 (stating that adoption of a narrow construction of "supplies" "would emasculate § 271(f) for software inventions"). This approach was misguided. The "task here is not to determine what would further Congress's goal [in enacting the statute], but to determine what the words of the statute must fairly be understood to mean." *Holmes Group.*, 535 U.S. at 833 (interpreting 28 U.S.C. §§ 1295(a)(1) and 1338 in line with their text, where the congressional intent compelled a different result). The Federal Circuit's approach ignored the text in an effort to effectuate its view of Congress's goal in enacting the statute. In doing so, the Federal Circuit stepped outside of the proper role of a court.

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[12] The same holds for Microsoft's electronic transmissions to computers in foreign countries. The medium of exportation is not relevant to liability under section 271(f). In addition, the downloading of electronically transmitted software from a foreign computer to other foreign computers is tantamount to the copying of software stored on a disk.

Moreover, in its attempt to further the perceived purpose of section 271(f), the Federal Circuit ignored other policy considerations. Under the Federal Circuit's interpretation of section 271(f), once a company creates software in the United States, it could not send the software to a foreign country for replication without potentially incurring liability for infringement of a United States patent. This would create a strong incentive for software companies to relocate development facilities – and jobs – outside of the United States.

CONCLUSION

For the foregoing reasons this Court should hold that 1) software can be a "component[] of a patented invention" and 2) that copies of software made in a foreign country are not "supplied in or from the United States."

Respectfully submitted,

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In the Supreme Court of the United States

MICROSOFT CORPORATION,

Petitioner,

v.

AT&T, CORP.,

Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF PROFESSOR EDWARD LEE AS *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY

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INTEREST OF THE *AMICUS CURIAE*[1]

Amicus curiae Edward Lee is a professor of intellectual property law at The Ohio State University Moritz College of Law. He is the co-author of a casebook on INTERNATIONAL INTELLECTUAL PROPERTY (West 2006) and has written about the interpretation of domestic intellectual property statutes in cases involving foreign activity or elements. *See* Edward Lee, *The New Canon: Using or Misusing Foreign Law to Decide Domestic Intellectual Property Claims*, 46 HARV. INT'L L.J. 1 (2005). *Amicus* offers this brief to highlight two issues that have received little or no attention in the courts' opinions below.

INTRODUCTION AND SUMMARY OF ARGUMENT

When Congress enacted § 271(f) of the Patent Code in 1984, it was operating in a world before Microsoft Windows software even existed,[2] at a time when personal computers were crude and the law on the patentability of software-related inventions was just beginning to develop. *Diamond v. Diehr*, 450 U.S. 175 (1981). Back then, the Internet, as we know it, and the Agreement on Trade Related Aspects of Intellectual Property (TRIPs Agreement) were a decade away from formation. Markets were more domestic than global, and intellectual property disputes more often involved purely domestic conduct. Against this backdrop, Congress enacted § 271(f)(1) to proscribe certain extraterritorial conduct involving the shipment of component parts of a patented

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[1] The parties' letters of consent to the filing of *amici* briefs have been lodged with the Clerk. Pursuant to Rule 37.6 of the Rules of the Court, *amicus curiae* states that no counsel for a party has written this brief in whole or in part and that no person or entity, other than *amicus*, has made a monetary contribution for preparing or submitting this brief.

[2] Microsoft Windows 1.0 was first publicly sold in November 1985. *See* Public Broadcasting Station, *A History of the Computer*, http://www.pbs.org/nerds/timeline/micro.html.

invention for assembly abroad. Section 271(f)(1) overruled the strict territorial approach taken in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), a case involving the shipment of components of a patented shrimp deveiner for assembly abroad. Such conduct § 271(f)(1) now proscribes.

This case is a long way from 1984, and shrimp deveiners. It involves a dispute over speech compression technology contained within highly sophisticated computer software, which, when stored on computers, infringes the patent of AT&T. It takes no encyclopedic knowledge of law, history, or technology to understand why Congress in 1984 did not anticipate the precise issue presented today: whether § 271(f)(1) applies to second-generation[3] copies of software made abroad from a master copy sent from the United States, with the specific intent of the sender that the second-generation copies be made by its foreign licensee.

The Federal Circuit held that § 271(f)(1) does apply to such second-generation software copies. *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1370-72 (Fed. Cir. 2005). Under an ordinary understanding of "supplied," the Federal Circuit's interpretation is not unreasonable. But the Federal Circuit's interpretation, although reasonable, is not the only interpretation of § 271(f)(1), much less one that is clearly prescribed by its language (or purpose). In dissent, Judge Rader offered a narrower interpretation of § 271(f)(1), one that arguably is no less reasonable, but one that produces the

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[3] By a "first-generation" copy of Windows software, I mean any copy of Windows made by Microsoft for further copying by its licensees. By "second-generation" copy, I mean any copy of Windows made by a Microsoft licensee from a first-generation or master copy sent by Microsoft, or from a subsequent copy made by the licensee from a first-generation or master copy sent by Microsoft. Thus, under the terminology I use, second-generation copy would apply to all copies of Windows made by the Microsoft licensee under the terms of its license, as long as the licensee first generated some copies from a master copy sent from Microsoft (which copies could generate even more copies).

opposite result in this case. *AT&T*, 414 F.3d at 1372-73 (Rader, J., dissenting).

In deciding between these two interpretations, I believe the Court should consider two additional factors in the law. One factor, favoring the Federal Circuit's position, is an analogous copyright doctrine—overlooked by the parties and the courts below—that permits recovery of extraterritorial damages for lost profits based on foreign copying of a U.S. copyrighted work where a predicate act of infringement facilitated the foreign copying. *Sheldon v. Metro-Goldwyn Pictures Corp.*, 106 F.2d 45, 52 (2d Cir. 1939) (L. Hand, J.). The other factor, favoring Judge Rader's dissenting position, is the canon of construction against extraterritorial interpretation of U.S. statutes. The precise issue is whether this canon can apply in interpreting a provision that Congress clearly intended to have some extraterritorial scope. Below, I argue that the canon may apply even to a provision that Congress intended to have extraterritorial scope, if the statutory language is ambiguous in a way that warrants a concern for substantial interference with the ability of foreign countries to regulate conduct within their borders. Such is the case here.

ARGUMENT

I. The Text of § 271(f)(1) Is Susceptible to Two Reasonable, But Competing Interpretations

The second question presented raises the more difficult issue of statutory interpretation.[4] The question is whether

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[4] I agree with the Federal Circuit's analysis of the first question presented, i.e., the interpretation of "component" to include software components of "a patented invention." *See AT&T*, 414 F.3d at 1369. Section 271(f) applies to "a patented invention," and the "components" thereof. There is no exclusion for software components or software-related inventions. Section 271(a), which is the basic provision that

Microsoft "supplies or causes to be supplied ... *from the United States* all or a substantial portion of the components of a patented invention," when Microsoft has shipped from the United States its Windows software on "golden master" disk or electronically to its foreign licensees for them to copy and install on computers abroad. (The Windows program contains speech codecs that infringe AT&T's '580 patent when the codecs are installed on a computer in the U.S.)

In interpreting a statute, the Court begins with the text. *Carter v. United States*, 530 U.S. 255, 271 (2000). Section 271(f)(1) of the Patent Code states:

> Whoever without authority *supplies or causes to be supplied in or from the United States* all or a substantial portion of the components of a patented invention, where such components are uncombined in whole or in part, in such manner as to actively induce the combination of such components outside of the United States in a manner that would infringe the patent if such combination occurred within the United States, shall be liable as an infringer.

35 U.S.C. § 271(f)(1) (emphasis added).

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defines the exclusive rights for all patent holders, applies generally to "any patented invention," a term that must necessarily include all patented inventions, including processes (otherwise, no provision would exist in the Patent Code to define the exclusive rights of patented processes—an absurd result). 35 U.S.C. § 271(a). In other parts of § 271, where Congress wanted to specify patented products versus patented processes, Congress did so expressly. *Id.* § 271(c) (liability where someone "offers to sell or sells within the United States or imports into the United States *a component of a patented machine, manufacture, combination or composition*, or a material or apparatus for use in practicing *a patented process*") (emphasis added); *see also id.* § 271(g). Here, there is no dispute AT&T has a patented invention, a part of which involves speech codecs (that Microsoft incorporates into Windows).

As this Court has advised, "Unless otherwise defined, words will be interpreted as taking their ordinary, contemporary, common meaning, and, in dealing with the patent laws, we have more than once cautioned that courts should not read into the patent laws limitations and conditions which the legislature has not expressed." *Diamond v. Diehr*, 450 U.S. 175, 182 (1981) (internal quotations and citations omitted).

A. The Federal Circuit's Interpretation of § 271(f)(1)

An ordinary understanding of the verb "supply" is "to make available for use, provide," or "to furnish or equip with." THE AMERICAN HERITAGE DICTIONARY OF THE ENGLISH LANGUAGE 1739 (4th ed. 2000). To "supply" can also mean to "be a source of." THE NEW OXFORD AMERICAN DICTIONARY 1707 (2001).

The district court and the Federal Circuit effectively held that the Windows software on the "golden master" disk or electronic copy sent by Microsoft was "supplied ... from the United States," as were even the *second-generation* copies of the software made by Microsoft's licensees in foreign countries because those second-generation copies resulted from the simple process of copying onto a computer the master or first-generation software sent by Microsoft from the United States. *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1370 (Fed. Cir. 2005).

As the Federal Circuit explained, "It is inherent in the nature of software that one can supply only a single disk that may be replicated—saving material, shipping, and storage costs—instead of supplying a separate disk for each copy of the software to be sold abroad. All of such resulting copies have essentially been supplied from the United States." *Id.*

An ordinary understanding of "supply" arguably supports the Federal Circuit's interpretation. For example, imagine that Microsoft's licensees had all been located in the U.S. and had made the second-generation copies here. Even though the licensees (not Microsoft) actually made the second-generation copies on their computers, we probably would have no problem saying that the second-generation copies were *supplied from Microsoft*, given the facile nature of making copies of software onto a computer. Microsoft is the ultimate source of the second-generation software, which was copied from master copies that Microsoft intended its licensees to copy. No doubt Microsoft wants all consumers to believe that Microsoft ultimately is the *source*, *provider*, and *furnisher* of all computer software that bears its well-known trademarks "Microsoft" and "Windows."

The only difference with this example and the case at hand is geography: the facts here involve second-generation copying that occurs abroad, not in the United States. A fair argument can be made, however, that this change in geography should not alter the above analysis. In both the purely domestic example above and this case involving some transnational copying, the second-generation copies of Microsoft Windows are so easily produced from the first-generation copy that, practically speaking, it may be fair to characterize the creator of the first-generation copy as the person who "supplied" the second-generation copies as well. Once a software program is created, it can easily be copied by the automated operation of a computer. No linguistic leap is needed to say that second-generation copies of an item whose very nature allows virtually automatic reproduction are "supplied from" the original source of the item who specifically intended the item to be so copied. Once Microsoft created the software with the potentially infringing speech codecs in the United States, nearly "everything was accomplished in this country except putting the pieces together as directed." *Deepsouth*, 406 U.S. at 533

(Blackmun, J., dissenting). Indeed, any computer can generate copies of software from a master version with almost negligible human effort.[5]

For an analogy, consider digital copying of music files on the Internet. If a U.S. citizen sent from the United States an email with a file of an unpublished Madonna song to friends in Germany, with the specific intent that the friends copy the unpublished Madonna song and disseminate it to others in Germany, we probably would have no trouble saying that the second-generation copies of Madonna's song were "supplied from the United States" by the U.S. citizen, because that is precisely what the U.S. citizen intended and because digital files are so easily copied from the first digital copy by the automated operation of a computer. The only activity required of the German friend who received the master copy of the Madonna song from the U.S. citizen would be to hit the "forward" button on his Eudora (or Outlook Express) email program after inserting the email addresses of his friends. Once the U.S. citizen has emailed the Madonna song to his friend with the common intention for further copying of the song, the further digital copies of the song are practically a *fait accompli*.

Although the Federal Circuit's interpretation strikes me as reasonable, and consistent with a possible ordinary, everyday understanding of the word "supplied," as I explain below I do not believe it is the only reasonable interpretation of § 271(f)(1).

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[5] Indeed, it is not inconceivable that monkeys could be trained to copy software. *See* BBC, *No Words to Describe Monkeys' Play*, May 9, 2003, at http://news.bbc.co.uk/1/3013959.stm (discussing experiment in which 6 monkeys, placed in a room with a computer, hit "s" most often).

B. The Dissent's Interpretation of § 271(f)(1)

In dissent, Judge Rader argued that an ordinary meaning of "supply" does not include acts of *copying*, which are in effect a form of manufacturing. 414 F.3d at 1372. As Judge Rader explained, "As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software. Thus, copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying." *Id.* at 1373. Representing the United States, the Solicitor General now advances a similar interpretation. Brief for United States as *Amicus Curiae* 10 (No. 05-1056) (Sept. 2006) (petition stage).

The dissent's interpretation is not unreasonable. For physical components of a machine, such as the parts of a shrimp deveiner, which do not lend themselves to facile reproduction, we probably would *not* include the (re)production of those physical components by a foreign plant within the meaning of "supplied ... from the United States," even though a "master" physical component had been sent from the United States. Instead, we probably would more commonly describe the foreign plant as the one that "supplied" the components from the foreign country, where the components were made after they had been reverse-engineered and redesigned from the master, and then manufactured by the foreign manufacturing plant. The dissent's interpretation effectively requires us to understand "supplied" in the same way as we do for physical components where the components are copies of computer software. If the components are produced abroad in any way, they are not supplied from the United States. This interpretation, I believe, is reasonable, although still debatable.

Whether the dissent's interpretation is more persuasive than the majority's is, I believe, open to argument. In the case of computer software, what seems to be different from the shrimp deveiner example is that any computer can generate copies of the software with almost negligible human effort. Digital copies beget digital copies. By the time the software code is written, it can virtually reproduce itself. In order to make a physical part of a machine, however, a foreign manufacturing plant is needed to undertake considerable effort—reverse engineering and recreating the design of the component and then setting up an assembly line for production. In any event, I do not believe either interpretation is clearly prescribed by § 271(f)(1)'s language. Both interpretations are reasonable constructions.

II. Given the Ambiguity in § 271(f)(1), the Court Should Consider (i) Copyright Doctrine Allowing Recovery of Extraterritorial Damages and (ii) the Canon Against Extraterritorial Interpretation

Because § 271(f)(1) is susceptible to two reasonable, yet opposing constructions, the Court should consider two other considerations beyond the text of the statute: (1) First, an analogous copyright doctrine that allows recovery of extraterritorial damages for lost profits stemming from second-generation copying in a foreign country that had been facilitated by a predicate act of domestic infringement; and (2) second, the canon of construction against extraterritorial interpretation of domestic statutes. These considerations probably cut in opposite directions, but I believe the canon against extraterritorial interpretation may have greater force in this case.

A. The *Sheldon* rule: Copyright Law's Approach to Second-Generation Copying in Foreign Countries

The Court should consider that this case presents a fact pattern similar to one that lower courts have already addressed in copyright law, dating back over 65 years to Judge Learned Hand's opinion in *Sheldon v. Metro-Goldwyn Pictures Corp.*, 106 F.2d 45 (2d Cir. 1939) (*Sheldon II*). In *Sheldon*, the Second Circuit held that a copyright holder can recover damages for lost profits resulting from *both* domestic *and* foreign copying, if the domestic copying was a predicate act that facilitated the foreign copying. *Id.* at 52. Although decided under the 1909 Copyright Act, Pub. L. No. 60-349, ch. 320, § 1(d), 35 Stat. 1075 (1909), the *Sheldon* rule is still followed today in the Second and the Ninth Circuits under the 1976 Copyright Act. *See Update Art, Inc. v. Modiin Publ'g, Ltd.*, 843 F.2d 67, 73 (2d Cir. 1988); *L.A. News Serv. v. Reuters Television Int'l, Ltd.*, 149 F.3d 987, 991-92 (9th Cir. 1998) (*L.A. News I*), *cert. denied*, 525 U.S. 1141 (1999).

The *Sheldon* case involved facts analogous to those presented in this case—i.e., a predicate act of infringement under U.S. law that facilitates foreign acts of copying. In 1938, Edward Sheldon sued Metro-Goldwyn Pictures and other defendants (collectively, "MGM") for making, distributing, and exhibiting the movie *Letty Lynton*, parts of which Sheldon alleged infringed his play *Dishonored Lady*. Both the movie and the play were based on the cause célèbre involving the 1857 trial and acquittal of Madeleine Smith, who had been charged with poisoning her lover. *Sheldon v. Metro-Goldwyn Pictures Corp.*, 81 F.2d 49, 49-50 (2d Cir. 1936) (*Sheldon I*). In reversing the trial court's dismissal of the claim, the Second Circuit (in a now famous opinion written by Learned Hand) ultimately found that MGM's movie infringed Sheldon's play. *Id.* at 55-56.

Given the finding of copyright infringement, a key issue remaining involved whether Sheldon could recover additional damages for defendants' foreign copying (and exhibiting) of their movie from negatives of the film they made in the U.S., but shipped abroad for copying into positives of the film. The Second Circuit held that the Copyright Act permitted recovery for any profits defendants made from such foreign activity:

> The plaintiffs made no proof of foreign law, and we cannot say that the exhibition of the positives abroad was a tort. However, exhibition is not the only act forbidden by the Copyright Act; Section 1(d), 17 U.S.C.A. § 1(d), gives to the author the exclusive right, not only to perform a dramatic work, but 'to make * * * any transcription or record thereof * * * from which, in whole or in part, it may in any manner * * * be * * * reproduced.' *The Culver Company made the negatives in this country, or had them made here, and shipped them abroad, where the positives were produced and exhibited.* The negatives were 'records' from which the work could be 'reproduced', and it was a tort to make them in this country. The plaintiffs acquired an equitable interest in them as soon as they were made, which attached to any profits from their exploitation, whether in the form of money remitted to the United States, or of increase in the value of shares of foreign companies held by the defendants. We need not decide whether the law of those countries where the negatives were exploited, recognized the plaintiffs' equitable interest; we can assume arguendo that it did not, for, as soon as any of the profits so realized took the form of property whose situs was in the United States, our law seized upon them and impressed them with a constructive trust, whatever their form. Compare *Goulds Mfg. Co. v. Cowing*, 105 U.S. 253; *Dowagiac Mfg. Co. v. Minnesota Moline Plow Co.*, 235 U.S. 641, at page 650.

Sheldon II, 106 F.2d at 52 (emphasis added).

Subsequent courts and commentators have explained the *Sheldon* rule as allowing, under copyright law, the recovery of lost profits accruing from foreign activity if a "predicate act of infringement occurr[ed] within the United States [that] enabled further reproduction abroad." *L.A. News Serv. I*, 149 F.3d at 992; *see* 2 PAUL GOLDSTEIN, GOLDSTEIN ON COPYRIGHT §14.0, at 14:2 (3d ed. 2006); 4 MELVILLE B. NIMMER & DAVID NIMMER, NIMMER ON COPYRIGHT § 14.05, at 14-119 (2006). As Learned Hand explained, part of the theory for this doctrine is that the copyright holder is deemed to possess an "equitable interest" in any lost profits that attaches once the defendant has committed a predicate act of infringement in the U.S. *Sheldon II*, 106 F.2d at 52. Courts, however, have not allowed recovery, such as for general damages, where the defendant did not profit from its domestic infringement or foreign activity. *See L.A. News Serv. v. Reuters Television Int'l, Ltd.*, 340 F.3d 926, 931 (9th Cir. 2003) (*L.A. News II*), *cert. denied*, 541 U.S. 1041 (2004).

Of course, it is open to question whether copyright doctrine has any relevance to patent law. It may not. But, as this Court has unanimously reaffirmed, copyright law and patent law share a "historic kinship" that, in some cases, militates in favor of adopting a similar approach for both areas of law. *Metro-Goldwyn-Mayer Studios, Inc. v. Grokster, Ltd.*, 125 S. Ct. 2764, 2780 (2005) ("For the same reasons that *Sony* took the staple-article doctrine of patent law as a model for its copyright safe-harbor rule, the inducement rule, too, is a sensible one for copyright."); *Sony Corp. of America v. Universal City Studios, Inc.*, 464 U.S. 417, 439 (1984) (recognizing "historic kinship" between patent and copyright law).[6] Moreover, the Court should bear

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[6] In enunciating its rule, the *Sheldon* court noted, for comparison, this Court's territorial interpretation of the Patent Code. *See Sheldon II*, 106 F.2d at 52.

in mind that the Copyright Act protects computer software. *Computer Assocs. Int'l, Inc. v. Altai, Inc.*, 982 F.2d 693, 702 (2d Cir. 1992). Future cases involving fact patterns analogous to this case could easily involve both copyright and patent claims, thereby implicating directly the *Sheldon* rule.

By analogy to the *Sheldon* rule, one could argue that Microsoft committed at least one predicate act of infringement under § 271(f)(1) by sending its Windows software on master disk from the United States to its foreign licensees abroad, with the specific intent that it be used for assembly into computers that infringe AT&T's patent.[7] (Even Judge Rader in dissent appeared to agree that Microsoft's sending of a master copy violated § 271(f). *AT&T*, 414 F.3d at 1373 (§ 271(f) "attaches liability to each individual export from the United States of components of an incomplete invention for assembly abroad")). Given this predicate act of infringement by Microsoft under § 271(f)(1), a court should be allowed to consider, when computing damages for profits lost by AT&T, the acts of copying by Microsoft's licensees that Microsoft's predicate act of infringement facilitated—i.e., the second-generation copies derived from Microsoft Windows by Microsoft's licensees in foreign countries. *See* 35 U.S.C. § 284 (allowing damages "adequate to compensate for the infringement," including treble damages). This argument is at least worth consideration, although ultimately I believe the canon against extraterritorial application of domestic statutes carries greater force in this case for the reasons explained below.

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[7] An additional predicate act of infringement would be Microsoft's development and inclusion of the speech codec technology in Windows, which infringes AT&T's patent when installed on a computer. Microsoft stipulated that it had infringed AT&T's patent "by selling copies of its Windows software to manufacturers of computers that are ultimately manufactured, used, or sold in the United States" Microsoft Pet. for Writ of Certiorari 7 (No. 05-1056) (Feb. 17, 2006).

B. The Canon Against Extraterritorial Application of U.S. Statutes

1. The relevance of the canon to extraterritorial provisions

This Court should also consider the extent to which the canon against extraterritorial interpretation of the Patent Code applies, if at all. This Court has long recognized a general presumption against extraterritorial application of a domestic statute and a specific presumption against extraterritorial interpretation of the Patent Code. *See Foley Bros., Inc. v. Filardo*, 336 U.S. 281, 285 (1949); *Brown v. Duchesne*, 60 U.S. 183, 195 (1856). The more difficult question presented here—unaddressed by the courts below—is whether the presumption has any application to a statutory provision Congress clearly enacted to apply extraterritorially in some cases.

On the one hand, it could be argued that, because Congress has given clear expression that § 271(f) applies to some extraterritorial conduct, the canon does not apply. It simply drops out of the equation, even if there is ambiguity in interpreting the *scope* of the extraterritorial provision. The ordinary tools of statutory construction then apply, without resort to the canon.

On the other hand, one could argue that the presumption should be considered (if not necessarily applied) in precisely those circumstances where the scope of an extraterritorial provision is ambiguous.

Some support for this latter approach can be found in this Court's analysis in *Smith v. United States*, 507 U.S. 197 (1993). There, the Court held that the Federal Tort Claims Act's waiver of sovereign immunity for certain tort claims against the federal government did not apply to claims that

arose in Antarctica because § 2680(k) of the Act barred jurisdiction over "[a]ny claim arising in a foreign country." *Id.* at 199. While concluding that an ordinary understanding of "country" might include Antarctica, even though it has no government, the Court conceded that "this is not the only possible interpretation of the term." *Id.* at 201. After examining other parts of the Act, the Court also relied on two canons of construction to support its interpretation—the canon for interpreting waivers of the immunity of the United States and the canon against extraterritorial application of domestic statutes. *Id.* at 203-04. As to the latter canon, the Court stated that "[t]he applicability of the presumption is not defeated here just because the FTCA specifically addresses the issue of extraterritorial application in the foreign-country exception." *Id.* at 204.

Of course, *Smith* presented an easier case in which to apply the canon against extraterritorial interpretation because the "foreign country" exception specifically indicated Congress's intent against an extraterritorial scope to the FTCA. The canon reinforced the non-extraterritorial intent of the provision. *See id.* In this case, however, Congress's intent in § 271(f) was *for* an extraterritorial scope to that provision. Accordingly, here, the canon against extraterritorial interpretation would be operating to *constrain*—rather than to fortify, as was the case in *Smith*—the statute's directive on extraterritorial application.

However, in *F. Hoffmann-La Roche Ltd. v. Empagran S.A.*, 542 U.S. 155 (2004), the Court recently *applied* the canon against extraterritorial construction in interpreting the scope of an extraterritorial antitrust provision. The case involved the "domestic injury" exception in the Foreign Trade Antitrust Improvements Act of 1982 that applied extraterritorially to create a cause of action under the Sherman Act for foreign activity that caused a domestic injury. *Id.* at 159. The provision was an exception to a more

general provision that expressly stated that the Sherman Act "shall not apply to conduct involving trade or commerce ... with foreign nations." *Id.* at 158. The Court found the language of the domestic injury exception was ambiguous as to whether it applied to foreign activity that caused some domestic antitrust injury, but also some "independently cause[d] separate foreign injury." *Id.* Given the ambiguity, the Court applied the presumption against extraterritorial interpretation to limit the scope of the extraterritorial "domestic injury" exception. *Id.* at 164.

Empagran seems on all fours with this case. Like the general exclusion of the Sherman Act from reaching foreign conduct, *see Empagran*, 542 U.S. at 158, the basic patent infringement provision is expressly worded to apply to conduct "within the United States." 35 U.S.C. § 271(a). And, like the domestic injury exception in *Empagran*, § 271(f) operates as an extraterritorial exception to the general patent infringement provision.

2. The policy behind the canon would be served by a narrow reading of § 271(f)(1)

Therefore, it is appropriate to consider the canon against extraterritorial interpretation in this case. If this Court agrees with the foregoing analysis that the language of § 271(f)(1) lends itself to two reasonable, but opposing interpretations, then the Court should consider applying the presumption against extraterritorial interpretation. *Smith*, 507 U.S. at 203-04 (characterizing canon as "presumption").

First, the policy behind the canon militates against the extraterritorial reading of the Federal Circuit. The canon "serves to avoid 'unintended clashes between our laws and those of other nations which could result in international discord.'" *Id.* at 204 n.5.

In this case, a broad extraterritorial reading of § 271(f), particularly as applied to computer software, could well conflict with the patent laws of foreign countries. Unfortunately, neither of the courts below even considered how their decisions might affect the patent systems in foreign countries. Unlike *Deepsouth*, where the record before this Court indicated that the patentee had "foreign patents" for its invention, 406 U.S. at 531, the record here does not appear to indicate whether AT&T has any foreign patents in the countries where it alleges Microsoft has infringed AT&T's U.S. patent. In its reply brief at the petition stage, Microsoft asserts that AT&T "never bothered to undertake" applying for foreign patents. Microsoft Reply Brief for Pet. 4 (No. 05-1056) (April 4, 2006). If that allegation is correct, then AT&T's speech codec invention would likely be free for others to copy in those foreign countries where it is not patented. In such case, the Federal Circuit's ruling would create a direct conflict with foreign patent laws, proscribing under U.S. law conduct of Microsoft that foreign countries would intend to allow within their borders.

In addition, a broad extraterritorial reading of § 271(f)(1) runs in tension with the general principle of territoriality, which forms the background assumption of all the major international IP agreements, most notably, the TRIPs Agreement, which applies to all WTO countries. The principle of territoriality, although not a formal treaty obligation, allows each country the flexibility to decide those areas of patent law (such as the patentability of computer software) that are not dictated by the international minimum standards of the TRIPs Agreement. *See* Edward Lee, *The New Canon: Using or Misusing Foreign Law to Decide Domestic Intellectual Property Claims*, 46 HARV. INT'L L.J. 1, 7 (2005). This strict territorial approach to patent laws is reinforced by the prevailing approach among countries in not recognizing any subject matter jurisdiction over foreign patent claims. *See* DANIEL C.K. CHOW & EDWARD LEE,

INTERNATIONAL INTELLECTUAL PROPERTY 24, 824 (West 2006).[8]

Particularly because patent laws affect business and innovation policy within a country, countries need flexibility to decide how conduct within their own borders is to be adjudged by patent law. For example, in the European Union, how patent law should treat computer software is a major area of controversy that is, as of yet, unresolved. In 2005, the European Parliament overwhelmingly rejected, by a vote of 648 to 14, the proposed European Directive on the Patentability of Computer-Implemented Inventions, which would have attempted to harmonize the patent laws of all EU countries with respect to software inventions. *See* CHOW & LEE, *supra*, at 360.

Second, accepting that the canon's policy supports applying it here, the text, legislative history, and purpose of § 271(f) all fail to overcome this presumption against extraterritoriality. As analyzed above, the language "supplied ... from the United States" in § 271(f)(1) is open to two reasonable, but competing interpretations. The text falls short of providing "clear evidence," *Smith*, 507 U.S. at 204, or a "clear and certain signal from Congress," *Deepsouth*, 406 U.S. at 531, as to the extraterritorial prohibition of the kind of second-generation copying of software in this case.

Moreover, to the extent legislative history is relevant to the Court's analysis, there does not appear to be any evidence providing a clear or significant indication that Congress intended §271(f)(1) to apply to the circumstances of second-generation software copying from a master copy sent abroad. Given the relatively nascent state of personal computers and software at the time, Congress understandably did not focus

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[8] In a case pending on appeal, the Federal Circuit is revisiting this issue. *Voda v. Cordis Corp.*, No. 05-1238 (Fed. Cir.) (argued Jan. 12, 2006).

on the kind of facts presented here when enacting § 271(f)(1). Congress intended "to close a loophole in patent law" created by *Deepsouth*, the shrimp deveiner case. Patent Law Amendments Act of 1984, Section-by-Section Analysis, 1984 U.S.C.C.A.N. 5827, 5828. But Congress did not discuss whether that loophole applied to facile second-generation copying of components, much less consider how § 271(f) might affect the U.S. software industry—which now is vital to the U.S. economy.

To the extent that Congress's purpose in enacting § 271(f) was also "to avoid encouraging manufacturing outside the United States," Patent Law Amendments Act of 1984, Section-by-Section Analysis, 1984 U.S.C.C.A.N. 5827, that purpose itself may not necessarily be served by the Federal Circuit's interpretation. Before the district court, Microsoft threatened to "simply pick up [its] manufacturing operation for the golden master, go [one] hundred miles north to Vancouver, set up the operation in Vancouver, [and] burn [its] golden master CDs [there]." *AT&T Corp. v. Microsoft Corp.*, No. 01 Civ. 4872, 2004 WL 406640, at *8 (S.D.N.Y. March 5, 2004). Assuming AT&T did not have a Canadian patent for its invention and assuming Microsoft recreated its Windows software independently in Vancouver, Microsoft's relocation of its plant to Vancouver might allow it—properly—to escape future liability under U.S. patent law.

Finally, to the extent the *Sheldon* rule in copyright law might support the Federal Circuit's interpretation by analogy, the *Sheldon* rule itself may no longer be justifiable under the canon against extraterritorial interpretation.[9] The Copyright Act has even less textual support than the Patent Code (which has § 271(f)) for recovery for extraterritorial conduct. That question, however, can be properly reserved for another day.

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[9] Two leading copyright treatises have questioned the soundness of the *Sheldon* rule. *See* 2 GOLDSTEIN ON COPYRIGHT, *supra*, at § 14.0, at 14:2 – 14:3; 4 NIMMER ON COPYRIGHT, *supra*, at § 14.05, at 14-119.

The prudence of applying the canon against extraterritorial application is that it gives Congress another chance to reconsider the issue, *before* an extraterritorial encroachment is made on the laws, commercial relationships, and innovation policies in foreign countries. This restraint is, as the Court has admonished, especially "needed in today's highly interdependent commercial world." *Empagran*, 542 U.S. at 165.

CONCLUSION

For the foregoing reasons, the Court should consider the relevance of the canon against extraterritorial interpretation to this case.

Respectfully submitted,

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,
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AT&T CORP.,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF SHELL OIL COMPANY AS *AMICUS CURIAE* IN SUPPORT OF PETITIONER

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v.

AT&T CORP.,
Respondent.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

BRIEF OF SHELL OIL COMPANY

INTEREST OF *AMICUS*

Amicus curiae, Shell Oil Company, is involved in many aspects of the U.S. patent system, and thus is directly affected by how the U.S. patent laws are applied to both patentees and potential defendants in U.S. courts.[1] A proper interpretation of when and how infringement liability may be imposed under U.S. patents concerning importing and exporting activities among multiple countries has critical relevance to business decisions involving such things as manufacturing and shipping locations, supply contracts, subcontracting, and indemnity agreements. As such, the Federal Circuit's recent interpretations of 35 U.S.C. § 271(f) have created critical legal and business concerns of

[1] Counsel for *amicus curiae* authored this brief in its entirety. No person or entity other than *amicus curiae* or its counsel made a monetary contribution to the preparation or submission of this brief. Both petitioner and respondent have filed with the Court blanket consents for all briefs *amicus curiae*.

exceptional importance for Shell and any other company involved in multinational transactions involving technology.

The Federal Circuit's decision in *Eolas Technologies, Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), construing the statutory term "component" and its decision in this case construing the term "supplied" have rightfully garnered considerable attention within the domestic software industry. However, the enormous potential infringement liability created by the Federal Circuit's erroneous construction of § 271(f) extends well beyond these parties and the software technology at issue. The Federal Circuit's incorrect legal pronouncements in *Eolas* also directly caused that court to extend liability under § 271(f) to all U.S. method and process patents performed overseas. *Union Carbide Chemicals v. Shell Oil Co.*, 425 F.3d 1366 (Fed. Cir.), *reh'g denied*, 434 F.3d 1357 (Fed. Cir. 2006). Based on *Eolas*, the Federal Circuit has created infringement liability under U.S. law not only with respect to software developed in the United States that is later copied and incorporated into foreign products and systems covered by U.S. patents, but also with respect to any material or apparatus exported from the United States for use in foreign processes or methods.

Shell's interest in properly construing § 271(f) arose from its involvement as a party in *Union Carbide*. In that case, unlike in *Eolas* and this case, the only asserted claim covered a process, not a product or system. Applying existing law, the district court ruled that there could be no liability under § 271(f), and hence no damages, arising from Shell supplying unpatented catalysts from the United States for use in ethylene oxide production processes run by third parties entirely outside this country. However, in an opinion by the same judge that authored *Eolas*, the Federal Circuit reversed in *Union Carbide*, reiterating its view that "*every* component of *every* form of invention deserves the protection of 35 U.S.C. § 271(f); *i.e.*, that 'components' and 'patented inventions' under § 271(f) are not limited to physical

machines." 425 F.3d at 1379. As shown herein, those conclusions are wrong.

Because Shell reached a business resolution of its particular controversy with Union Carbide before filing its own petition to this Court, the Federal Circuit's decision in *Union Carbide* was left as the controlling precedent on the applicability of § 271(f) to process patents. As a result, that decision remains applicable to Shell and everyone else. Collectively, the Federal Circuit's decisions in *Eolas*, *AT&T*, and *Union Carbide* reflect a fundamental misunderstanding of § 271(f) which, if not changed by this Court, will adversely affect not only the nation's software industry, but every company and industry operating domestically that supplies any material and apparatus used in processes performed by their overseas customers.

Specifically, the decision in *Eolas* is the source of the Federal Circuit's serious misconstruction of § 271(f). As explained herein, the flawed legal conclusions in *Eolas* were rendered outside of an actual controversy in that case, and are directly contrary to the statutory language, Congress' intent, and even prior precedent of the Federal Circuit itself. As recognized by the grant of certiorari by this Court, this case presents the appropriate vehicle by which to restore the meaning of the terms "component" and "supplied" in § 271(f) to what was understood and enacted by Congress. Because the process patent scenario of the *Union Carbide* case aptly illustrates why the term "component" in § 271(f) does not apply to process steps or to other intangibles, Shell is uniquely positioned to provide additional arguments on the issues before this Court that have not been recognized or adequately addressed by the parties or the other amici.

ARGUMENT

I. Congress' Intended Meaning For "Component" And "Supplied" Is Best Illustrated By Examining Why Process And Method Patents Are Not Subject To § 271(f)

The view adopted by the Federal Circuit in *Eolas* as to the scope of the statutory term "component" in § 271(f) was deemed controlling in this case, and thus did not receive any independent analysis. Pet. App. 4a. Necessarily, therefore, Shell addresses the Federal Circuit's faulty reasoning in *Eolas*. By mischaracterizing software as a process and wrongly assuming that processes are entitled to the protections of § 271(f), the Federal Circuit in *Eolas* misconstrued the term "component" and then compounded that legal error in this case by further misconstruing the term "supplied" as it applies to the software at issue.

Simply put, the Federal Circuit seriously erred when it declared in *Eolas* that "every form of invention eligible for patenting falls within the protection of section 271(f)" and that patented processes have "components" within the meaning of § 271(f). 399 F.3d at 1339. As shown herein, such statements are wrong as a matter of law because the existing statutory language does not treat patented processes as having "components" and thus was never intended to extend the "protection" of § 271(f) to process patents. Indeed, the Federal Circuit itself had previously held that § 271(f) was not implicated when an apparatus recited in a process claim is exported for use in performing a patented process overseas. *Standard Haven Prods., Inc. v. Gencor Indus., Inc.*, 953 F.2d 1360, 1374 (Fed. Cir. 1992) (noting the patent "claims a method for producing asphalt, not the apparatus for implementing that process"). Notably, the Federal Circuit's analysis in *Eolas* never cited that directly

contrary precedent, and reached the opposite result without even attempting to interpret the actual statutory language.[2]

The single § 271(f) question presented in *Eolas*—whether software code made in the United States and exported abroad is a "component of a patented invention"—did not implicate or require deciding whether process patents are covered by § 271(f). Undoubtedly adhering to the court's prior holding in *Standard Havens*, Eolas only relied on its asserted product claim for its § 271(f) position, and therefore neither party raised or briefed whether the statute applied to patented processes (which surely contributed to the Federal Circuit's unbounded, unprincipled, and incorrect statutory analysis). Nevertheless, en route to declaring that the software exported by Microsoft on "golden master disks" could properly be held to be a "component" of the asserted computer *product* claim, the Federal Circuit incorrectly declared that software was itself a process and that "every component of every form of invention deserves the protection of section 271(f)." 399 F.3d at 1339.

While the Federal Circuit in *Eolas* was unable to "construct a principled reason for treating process inventions different than structural products" (399 F.3d at 1339), the statutory language does exactly that in both 35 U.S.C. § 271(c) and 35 U.S.C. § 271(f). By distinguishing "a component of a patented machine, manufacture, combination, or composition" from "a material or apparatus for use in practicing a patented process," the statutory language establishes that Congress did not consider or treat patented processes as having "components" and thus did not

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[2] In a decision issued after *Eolas* but before *Union Carbide*, the Federal Circuit in *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1321-23 (Fed. Cir. 2005), adhered to *Standard Havens* while distinguishing *Eolas*, at least for method claims. Clearly, therefore, the Federal Circuit's decisions in *NTP* and *Standard Havens* are utterly irreconcilable with *Eolas*, *AT&T*, and *Union Carbide* as to their underlying interpretations of § 271(f).

impose any liability under § 271(f) where materials or apparatus used in performing patented processes are supplied in or from the United States. Thus, the Federal Circuit in *Eolas* not only ignored its own binding precedent and issued an advisory opinion on a subject unrelated to the parties' actual controversy, but the Federal Circuit's flawed assumption that § 271(f) applies equally to patented products and processes is legally insupportable.

Properly construed, the infringement statute itself shows that Congress did not intend or authorize that result. Moreover, once it is realized that Congress did not contemplate that the intangible steps of a process could be "components" for purposes of § 271(f), the question presented here as to whether, when, and why software can be a "component" of a patented product or system invention becomes much easier to resolve. First, unless software is embodied in a specific physical or tangible structure, it cannot be a "component" of a patented invention for purposes of § 271(f). Second, to the extent that such physical manifestations of software can be a "component" of a patented product or system, any such "component" can only be "supplied" by creating, sending, transmitting, or forwarding the specific physical or tangible structure on which the software code is embodied.

II. For Purposes Of 35 U.S.C. § 271(f), Processes Do Not Have "Components" And Thus "Components" Cannot Be Intangible

For purposes of § 271(f), the Federal Circuit agreed that Eolas' "patented invention" was a "computer program product." 399 F.3d at 1339. However, rather than confining its analysis to deciding whether Microsoft's software was a "component" of Eolas' claimed "computer program *product*," the Federal Circuit improperly undertook to establish that "every component of every form of invention deserves the protection of section 271(f)." 399 F.3d at 1339. Of course, the proper judicial inquiry should not have been

whether such protection is "deserved," but whether Congress provided such protection. When properly construed, the statutory language shows that Congress clearly did not.

A. By Mischaracterizing Software As A Process, The Federal Circuit in *Eolas* Avoided Construing The Relevant Statutory Language

The Federal Circuit in *Eolas* began from the premise that it had to decide whether software code made in the United States and exported abroad is a "component[] of a patented invention" under § 271(f). 399 F.3d at 1338. Virtually from the outset of its analysis, however, the Federal Circuit improperly substituted determining what could be a "patented invention" for the required inquiry into what Congress provided could be a "component" of a patented invention.

The Federal Circuit held that "patented invention" in § 271(f) should be broadly construed as including "any new and useful process, machine, manufacture or composition of matter." *See* 399 F.3d at 1338-39 (citing 35 U.S.C. § 101). According to the court, "software code alone qualifies as an invention eligible for patenting under these categories, at least as processes." 399 F.3d at 1339. However, that simplistic view of software is fundamentally wrong, and directly caused the Federal Circuit's distortion of the statute as applied to both software and all patented processes.

Simply put, software is not a process. While software may represent a patentable process, or may be part of a patentable process, the software code itself is not a process. Moreover, that is true whether software is considered to be merely "intangible 0's and 1's" or whether the software is embodied on a tangible, physical structure such as a hard drive or computer disk. Indeed, making, selling, or copying a computer device containing software cannot directly infringe a process claim under § 271(a). In order for such a process

claim to be infringed, the software representing the claimed process would have to be run or used in a computer. Hence, the Federal Circuit in *Eolas* was wrong in characterizing software code as being a process and thus erred in analyzing the § 271(f) issue from that perspective.

Nothing cited by the Federal Circuit in *Eolas* supports its misplaced premise that software is a process. *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994), simply held that "a computer operating pursuant to software may represent patentable subject matter." However, software installed on a physical computer structure is a specific-purpose *apparatus* for purposes of the patent law. *See, e,g., WMS Gaming, Inc. v. Int'l Game Tech.*, 184 F.3d 1339, 1348 (Fed. Cir. 1999).[3] The method claims at issue in *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1359 (Fed. Cir. 1999), were patentable "processes" not because they were software, but because they produced "a useful, concrete, and tangible result" (citing *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1374 (Fed. Cir. 1998)). Indeed, the portion of the PTO's Manual of Patent Examining Procedure ("MPEP") cited by the Federal Circuit explains that "[s]ince a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process." *See* 399 F.3d at 1339 (citing MPEP § 2106.IV.B.1.a, at 2100-13 (8th ed. 2001)).

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[3] For that reason, the Federal Circuit's rationalization that "a disk is merely a container that facilitates physical handling of software, like bottles for liquids or pressurized cylinders for gases" (Pet. App. 8a) is disingenuous. Liquids or gases do not rearrange or alter the structure of the containers in which they are inserted. Moreover, because software is patentable only because a physical computer structure on which the software is installed becomes a specific-purpose *apparatus* for purposes of the patent law, the structural computer device containing the software is not merely a container, but is the only legally cognizable embodiment of the software.

By characterizing "software code claimed in conjunction with physical structure, such as a disk" as being a "process" for purposes of § 101, the Federal Circuit seriously erred. *See* 399 F.3d at 1339. Software coupled with a physical structure, such as a disk or memory, might be patentable as a machine, manufacture or composition of matter. However, whether tangible or intangible, software itself is not a process, but merely represents a process. In any event, whether or why software may be patentable in its own right was not even the right question.

Properly analyzed, the relevant issue in *Eolas* (and thus in this case) should not have been whether software could be a "patented invention," but whether software, after being exported on golden disks and copied onto computers in foreign countries, is a "component" of a patented computer *product* invention that had been "supplied" from the United States for purposes of § 271(f). By mischaracterizing software as a process, the Federal Circuit never resolved the true issues. More importantly, the Federal Circuit never recognized or analyzed the statutory language revealing Congress' specific meaning for the term "component."

B. 35 U.S.C. § 271(c) Confirms That Congress Did Not Intend "Components" To Include Materials Or Apparatus Used In A Patented Method Or Process

The Federal Circuit's erroneous assumptions in *Eolas* that anything that could be a "patented invention" could be a "component" of a patented invention and that all "patented inventions" are composed of "components" are directly refuted by the existing infringement statute. As shown below, Congress never used the term "component" when referring to patented processes or methods, and clearly distinguished "a component" from "a material or apparatus for use in practicing a patented process." In its desire to announce its own view of proper patent policy, the Federal Circuit's assumed scope of the term "component" completely

disregards the statutory language and the clear policy choices already made by Congress.

In drafting § 271(f)(2), Congress adopted language directly from 35 U.S.C. § 271(c), which defines liability for contributory infringement for acts within the United States. *See* Sen. R. 98-663, at 7 (1984). Given that linked heritage, it is highly instructive to examine the language in § 271(c) that was not incorporated by Congress into § 271(f)(2). Section 271(c) provides:

> Whoever offers to sell or sells within the United States or imports into the United States *a component of a patented machine, manufacture, combination, or composition*, or **a material or apparatus for use in practicing a patented process**, constituting a material part of the invention, knowing the same to be especially made or especially adapted for use in the infringement of such patent, and not a staple commodity of commerce suitable for substantial noninfringing use, shall be liable as a contributory infringer.

As shown by comparing the italicized and bolded passages above, § 271(c) distinguishes between "a *component* of a patented machine, manufacture, combination, or composition" and "a *material* or *apparatus* for use in practicing a patented process." On its face, the statutory language unmistakably reveals that Congress did not treat processes as having "components" and did not intend "component" to include "a material or apparatus for use in practicing a patented process."

If the Federal Circuit's assumptions in *Eolas* had been correct that "patented invention" includes "patented process" and that a "component" could be a material or apparatus used in performing a patented process or even a

step or act of such patented process, then Congress would not have specified separately in § 271(c) that contributory infringement included selling or importing "a material or apparatus for use in practicing a patented process." To avoid rendering the latter phrase entirely meaningless, "a component" must be entirely distinct from "materials or apparatus for use in practicing a patented process."[4]

Notably, Congress incorporated the concept of "component" into § 271(f) but did not include the "material or apparatus for use in practicing a patented process" language. That drafting choice must be interpreted as intentional and material. Clearly, the language imported by Congress from § 271(c) reflects its understanding that a "component" will exist only in patented inventions that are themselves a machine, manufacture, combination, or composition. Equally true, the statutory language reflects Congress' understanding and intention that patented processes do not have "components." Just as § 271(c) does not use "component" with respect to a patented process, Congress incorporated that same understanding of "component" in § 271(c) when drafting § 271(f). *See, e.g., Sullivan v. Stroop*, 496 U.S. 478, 484 (1990) (normal rule is that "identical words used in different parts of the same act are intended to have the same meaning").

Moreover, Congress specifically enacted 35 U.S.C. § 271(g) to address when there could be liability under U.S. patent law for practicing U.S. patented processes in other countries. As one court recognized, § 271(g) shows Congress knew how to protect against foreign use of process patents, and chose to limit such protection only to uses which

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[4] *See, e.g., TRW Inc. v. Andrews*, 534 U.S. 19, 31 (2001) ("it is a cardinal principle of statutory construction that a statute ought, on the whole, to be so construed that, if it can be prevented, no clause, sentence, or word shall be superfluous, void, or insignificant"); *Connecticut Nat. Bank v. Germain*, 503 U.S. 249, 253 (1992) ("courts should disfavor interpretations of statutes that render language superfluous").

result in products introduced back into the United States. *See Enpat, Inc. v. Microsoft Corp.*, 6 F.Supp.2d 537, 539 (E.D. Va. 1998) ("had Congress intended to prohibit U.S. companies from exporting products which allow foreign companies to make unauthorized use of patent methods, it could have done so in clear, unambiguous language like that found in § 271(g)").

Contrary to the Federal Circuit's unsupported assumptions in *Eolas*, sound policy supports Congress' decision not to expand U.S. patent law to every patented process performed outside the United States. When all or most of the components of a patented product are manufactured domestically, or where a component specially made or adapted for use in a patented product is made domestically, § 271(f) protects a patentee from acts in this country affecting the domestic market in the patented product. However, in many process patent cases, like *Standard Havens* and *Union Carbide*, the exported material or apparatus is not patented, and no product claim could be asserted. Making or selling the exported material or apparatus in this country could not infringe.

If allowed to stand, the Federal Circuit's view of § 271(f) adopted in *Eolas*, this case, and *Union Carbide* would give U.S. patent protection to unpatented products or apparatus under the guise of enforcing a U.S. process patent against a process performed entirely in a foreign country. Absent any effect in a U.S. market served by the U.S. process patent holder, such as when a product of a patented process is later imported into this country, no interference by U.S. law in the non-U.S. markets served by the foreign processes is justified. That role must be reserved for the foreign patent systems. To avoid such serious extraterritoriality concerns, Congress properly did not include the "supplying materials or apparatus for use in practicing a patented process" language in § 271(f) and thus confined U.S. liability for use of foreign processes to the circumstances covered by § 271(g).

It should now be clear that this case presents issues extending well beyond the domestic software industry. Every industry and company active in international commerce is now faced with new potential liability never authorized by Congress. *See* B. Lehman, *Overseas Stretch*, Legal Times (July 11, 2005) (explaining why *Eolas* "goes too far"); J. Farrand, *Territoriality and Incentives Under the Patent Laws: Overreaching Harms U.S. Economic and Technological Interests*, 88 J. Pat. & Trademark Off. Soc. 761 (Sept. 2006). Having justifiably relied on *Standard Havens* and the plain language of the statute, companies will now become strongly disinclined to invest in existing or new U.S. manufacturing, research, or distribution facilities for materials or apparatus to be used in foreign processes. Such a significant burden on the country's economy should only have been enacted by Congress, not imposed unilaterally by a federal appellate court first creating and then adopting its own dicta.

If the unwarranted extraterritorial reach of U.S. law created by the Federal Circuit's decisions in *Eolas*, this case, and *Union Carbide* is not undone, enormous amounts of jobs and investment dollars will be relocated outside the United States. As one concrete example, the Federal Circuit's decisions misconstruing § 271(f) directly affected Shell's decision between expanding its existing catalyst production plant in California, or building a new facility outside the United States to avoid any possible liability under U.S. patent law. Similar investment decisions about whether and where to build, manufacture, do research, and operate within the United States will be made by countless other companies involved in international commerce.

Nevertheless, the district court in this case dismissed such concerns as better addressed through Congressional action rather than through a judicial engraftment onto § 271(f). Pet. App. 37a-38a. Similarly, the Federal Circuit declared that "possible loss of jobs in this country is not

justification for misinterpreting a statute to permit patent infringement" and that "it is enough that Congress intended that the language it enacted would be applied as we have applied it." Pet. App. 10a-11a (quoting *Griffin v. Oceanic Contractors, Inc.*, 458 U.S. 564, 576 (1982)). However, the Federal Circuit got it exactly backwards—both as to the proper statutory interpretation and as to Congress' intent. As shown, the Federal Circuit misinterpreted § 271(f) to find liability under U.S. patent laws where none was provided or intended by Congress. Thus, rather than being limited to resorting to Congress to remedy any dissatisfaction with the Federal Circuit's statutory construction, this Court is authorized and should be obligated to restore § 271(f) to its proper scope, as originally intended by Congress.

C. The Other Justifications In *Eolas* For Extending § 271(f) To Intangible Patented Processes Are Incorrect And Improper

In light of the express statutory language, the Federal Circuit's other rationalizations and justifications set forth in *Eolas* as to why § 271(f) should cover patented processes do not support that conclusion. For example, the Federal Circuit in *Eolas* cited the legislative history of § 271(f), but on its face, the single passage quoted in *Eolas* only applies to patented *products*:

> [Section 271(f)] will prevent copiers from avoiding U.S. patents by supplying components of *a patented product* in this country so that the assembly of the components may be completed abroad.

399 F.3d at 1340 (citing 130 Cong. Rec. H10525 (1984)). Because only patented products are mentioned, the above history does not support the Federal Circuit's declaration that Congress was "correcting a loophole for all forms of patented inventions." 399 F.3d at 1340. Indeed, because § 271(c) shows that Congress viewed only "patented products" to

have "components," the opposite conclusion from the one reached in *Eolas* should have been compelled.

The conclusion that § 271(f) does not protect U.S. process patents is also confirmed by the legislative history of 35 U.S.C. § 271(g), passed four years later in 1988. In 1986, Senate reports discussing the bill leading to § 271(g) stated:

> The bill does not attempt to prevent the use of the [patented] process in another country. If the U.S. process patentholder has not obtained a similar patent in another country, he has and should have no right by virtue of his U.S. patent to prevent anyone from using the process in that country. 132 Congr. Rec. S17, 386-02, at 6 (1986).

> Current law ... fails to protect against the use of the process in another country followed by importation into and use or sale within the United States of the resulting products. Simply using the process in a foreign country where the U.S. inventor does not have a patent is perfectly legitimate; the measure we are considering prohibits only the subsequent importation, use and sale of the resulting products in this country. 132 Congr. Rec. S15, 049-01, at 5 (1986).

If § 271(f) truly protected against the use of patented processes in foreign countries in 1984, Congress would not have stated only two years later that existing law contained no such protection. Thus, the only protection against use of patented processes in foreign countries is limited to that subsequently enacted in § 271(g).

Moreover, even if § 271(f) did more than overrule *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518 (1972), the patents in that case did not claim any processes

using the disclosed apparatus. In *Deepsouth*, this Court held that patents on machinery for deveining shrimp were not infringed by selling the unassembled parts of the accused device for later assembly and use in Brazil. *Id.* at 526-32. Whether assembled or not, the sale or supply of the components or materials needed to perform a patented process has never infringed the process patent, even where such sale or supply occurs or the resulting apparatus is assembled in the United States. *See Joy Technologies, Inc. v. Flakt, Inc.*, 6 F.3d 770, 774-76 (Fed. Cir. 1993) (citing *Standard Havens* and other cases).

Nothing in § 271(f) affected or changed that law. Even if a party supplies in or from the United States all materials or every piece of equipment needed to build or operate an apparatus for performing a claimed process, there has never been any statutory basis for imposing liability under a U.S. *process* patent where the parts are assembled and used in a foreign country. Even when such items are combined, the "combination" yields an apparatus, not the process. As explained in *Joy*, nothing is being "combined outside the United States in a manner that would infringe the [process] patent if such combination occurred within the United States." *See also NTP*, 418 F.3d at 1322 (supplying devices and products "is not the statutory 'supply' of any 'component' steps for combination into ... patented methods").

Yet, the Federal Circuit in *Eolas* incorrectly declared that "a 'component' of a process invention would encompass method steps or acts." 399 F.3d at 1339 (citing 35 U.S.C. § 112, ¶ 6). However, § 112, ¶ 6 only addresses how an "*element* in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof." It does not even contain the term "component" at all. The Federal Circuit had no basis for equating an "element" under § 112, ¶ 6 with a "component" under § 271(f). The former is directed to how an invention may be claimed, while the latter

governs only when supplying parts of an accused product gives rise to infringement liability. Those distinct statutory provisions and terms are entirely unrelated, and cannot support equating "element" of a patent claim with a "component" of an accused device for purposes of § 271(f).

Hence, the Federal Circuit in *Eolas* fundamentally erred in concluding that "[the] statutory language did not limit § 271(f) to patented 'machines' or patented 'physical structures'" and when it further declared that "the statute did not limit § 271(f) to 'machine' components or 'structural or physical' components." *See* 399 F.3d at 1339. That is exactly what Congress did. As confirmed by § 271(c), Congress associated "components" only with a "machine, manufacture, combination, or composition." Without question, those are all physical structures or apparatus. Moreover, by not using "component" when referring to a patented process, Congress thus limited the coverage for processes under § 271(c) to "a material or apparatus for use in practicing a patented process."

By omitting the latter language from § 271(f), Congress left no doubt that § 271(f) did not cover anything supplied for use in a patented process outside the United States. The statutory language reflects that one cannot supply or cause to be supplied a process step. Process steps are clearly intangible, and they are only performed, not supplied. More importantly, that same reasoning applies to any other intangible item, not just process steps. As used by Congress, "components" should be limited to physical or tangible items that can be supplied and combined to make patented *products* overseas, whether or not such modifiers appear in the statute. Properly interpreted, no other limitation on "component" needed to be expressed by Congress to have excluded patented processes and methods from the scope of § 271(f).

It is not the Federal Circuit's task or privilege to set "sound" patent policy for this country. Such difficult policy

formulations – including defining what acts should constitute infringement -- belong exclusively to Congress. *See, e.g.*, *Parker v. Flook*, 437 U.S. 584, 595-96 (1978); *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417, 456 (1984); *United States v. Dubilier Condensor Corp.*, 298 U.S. 178, 198-99 (1933). Indeed, this was not even a situation where Congress had yet to speak. Nevertheless, the Federal Circuit in *Eolas* ignored Congress' policy choices already embodied in the infringement statute, and incorrectly and impermissibly substituted its own judgment for that of Congress under the guise of statutory construction.

When a federal court makes a decision based on its perception of what is "deserved" – as first done in *Eolas* (399 F.3d at 1339), reiterated again in this case (Pet. App. 4a), and quoted yet again in *Union Carbide* (425 F.3d at 1379), the court has abandoned its judicial role of interpreting statutes in favor of usurping the legislative function from the bench. The Federal Circuit's decision in *Eolas* equating "component" in § 271(f) to anything that could be a patented invention, that court's decision in this case redefining "supplied" for purposes of software, and its decision in *Union Carbide* extending § 271(f) to all process patents are neither sound nor consistent with the policy choices already reached and enacted by Congress.

III. Under A Proper Construction Of § 271(f), Process Steps And Other Intangible Information Are Not "Components" And Thus Cannot Be "Supplied"

The above analysis establishing why § 271(f) does not apply to patented processes is directly significant to the two questions presented by this case. First, this Court should not construe "component" for purposes of § 271(f) as including either process steps or a material or apparatus used in practicing a patented process. As Congress clearly did not provide or intend for the term "component" to encompass such things, this Court should reject the Federal Circuit's

naked assumption that it did. Second, the statutory language reflects Congress' realization that processes and process steps are intangible, and as such, they cannot be supplied. As used by Congress, "component" is properly limited to tangible items that can be "supplied" and "combined" to make patented *products*, whether or not such modifiers appear in the statute.

Stated another way, while a process can be a "patented invention" under § 101, a process does not have "components" for purposes of § 271(f). As the Federal Circuit explained in *NTP*, the very nature of a process invention may compel a different result under § 271(f) even though the statute does not expressly limit the type of invention covered. 418 F.3d at 1322. Properly understood, no other limitation on the term "component" needed to have been expressed in § 271(f) to exclude intangible items and patented processes from its scope.[5]

As explained in *NTP*, "[a] method, by its very nature, is nothing more than the steps of which it is comprised." *Id.* at 1322. Implicitly recognizing that process steps are intangible, the Federal Circuit in *NTP* correctly observed that "it is difficult to conceive of how one might supply or cause to be supplied all or a substantial portion of the steps of a patented method in the sense contemplated by the phrase 'components of a patent invention' in section 271(f)." *Id.* The reason for the court's conceptual difficulty should be

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[5] In that regard, the parties are incorrect in assuming or asserting that Congress did not provide a specific meaning for "component." *See, e.g.*, Petition, at 15-16 (using general dictionary definition); Brief in Opposition to Petition, at 13-14 (asserting that "Congress did not specifically define the word 'component'"); Brief for United States as Amicus Curiae ("U.S. Brief"), at 7 (asserting that "[b]ecause the statute does not define the term 'component,' the term has its 'ordinary or natural meaning'"). As shown, the statute defines the term at least by demonstrating what it is not—as used in § 271(c) and § 271(f), a "component" for purposes of the patent statute cannot be intangible and cannot be "a material or apparatus used in practicing a patented process."

apparent—to the extent that process steps, software, design information, data, knowledge, or ideas remain in intangible form, they cannot be components of anything, including patented inventions.

For that reason, the Federal Circuit in *NTP* properly held that the defendant's supply of products, such as its handheld BlackBerry® devices, to customers in this country did not constitute supplying or causing to be supplied in this country any steps of a patented process invention for combination outside the United States so as to infringe the asserted method claims. 418 F.3d at 1322-23. Although not expressly recognized in *NTP*, the additional reason for that conclusion is that "materials or apparatus for use in a patent process" are not "components" as that term was defined by Congress for purposes of § 271(f).

The Federal Circuit's unsupported assumption first announced in *Eolas* that *intangible* software can be a "component" is therefore incorrect. Indeed, as revealed in *NTP*, the product claim at issue in *Eolas* was directed to a software product claimed as comprising "a computer usable medium having computer readable program code physically embodied therein" and "computer readable program code." 418 F.3d at 1322. Thus, by its very terms, the product claim in *Eolas* reflected that allegedly intangible software can only be patentable when claimed in a tangible, physical form; *i.e.*, a computer usable medium, such as a hard drive or disk, having the program code or software physically embodied therein. Hence, for purposes of the patent laws, this Court should hold that software cannot be either a "patented invention" or a "component" absent a physical embodiment of such computer code.

Viewed in that light, the Federal Circuit's decisions in *Pellegrini v. Analog Devices, Inc.*, 375 F.3d 1113 (Fed. Cir. 2004), and *Bayer AG v. Housey Pharms., Inc.*, 340 F.3d 1367 (Fed. Cir. 2003), become instructive. In *Pellegrini*, the Federal Circuit held that § 271(f) "applies only where

components of a patent invention are physically present in the United States" and that "there can be no liability under § 271(f)(1) unless components are shipped from the United States for assembly." 375 F.3d at 1117. Clearly, intangibles such as process steps, information, or designs cannot be "physically present" or "shipped" or "combined" into products unless in tangible form.

In *Bayer*, the Federal Circuit held that the data obtained in other countries allegedly using patented processes to screen for potential drug candidates was not a "product" for purposes of § 271(g). 340 F.3d at 1371-72 (also noting that the statutory terms were "consistent in referring to tangible objects and not intangibles such as information"). The court further reasoned that the liability exception in § 271(g) where an accused product "becomes a trivial and nonessential component of another product" also appears to contemplate "a physical product." 340 F.3d at 1373. Once again, while instructions, data, and information become tangible when written down or recorded, that type of physical embodiment cannot transform those intangibles into "products" of patented processes or "components" of patented processes.

Once it is understood that software can only be recognized by the patent laws when in tangible form, the flaws in the Federal Circuit's interpretations of § 271(f) should become obvious. Nevertheless, Petitioner's central premise that its software code is intangible as long as it is uncoupled from any storage medium or computer (Pet. 3) may not fully answer the questions presented.[6] Clearly, the software code is in a tangible form when it is embodied on

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[6] Having accepted the Federal Circuit's mistaken view of "component," Respondent seemingly agrees with Petitioner that its software is intangible (*e.g.*, Supplemental Br. of Respondents, at 1, 2, 3, 4). If this Court agrees, the Federal Circuit could be reversed on that basis because intangible information, whether ideas, designs, or software, is not a "component" of a patented invention for purposes of § 271(f).

the golden master disk that is exported to other countries, and copies of that code are tangible after the copies are loaded onto physical structures within the computers assembled in foreign countries. However, it is undisputed that Microsoft's golden master disks are never themselves combined into any product or system in another country and that the separate computer drives or disks containing the copied software were never physically in the United States after the software was loaded. Therefore, under the proper interpretation of "component" and "supplied," there can be no liability under U.S. patent law with respect to any computer systems falling within the respondent's asserted product claims that are assembled entirely overseas and never subsequently imported into the United States.

Based on an inapplicable general definition of "component," the United States argues that "the software copy that is actually loaded onto the computers is a part, element, or ingredient of the patented invention." U.S. Brief, at 8. However, that too is overbroad and reflects inexact terminology. If the "patented invention" in question is a claimed product or system, the specific copy of the software that is so loaded on the computer may be a "component" of the patented invention. However, for the reasons stated, if the "patented invention" at issue is a process or method, the software even as loaded on a computer structure is still not part of the patented process, but is merely a material or apparatus for use in practicing the process and hence not a "component" at all.

The United States otherwise agrees that, for purposes of § 271(f), software must have "physical existence" or be "physically embodied" in a computer structure in order for the software to work and for the patented system containing the software to have been assembled. U.S. Brief, at 9. While the United States insists that the software remains "intangible" even after it has been loaded onto tangible, physical computer parts to create the specific-purpose *apparatus* recognizable under the patent laws, the outcome

here is the same either way. If software is deemed to be intangible in all contexts, then it cannot be a "component" under § 271(f) as a matter of law. If software can be a "component" but only when it is represented in tangible form, then such component cannot be divorced from the particular physical media on which it is embodied. In that case, the only components "supplied" by Microsoft in or from the United States are its golden master disks which are never combined with anything outside the United States in a manner that would infringe Respondent's asserted product or system claims.

The Federal Circuit's attempt to redefine the statutory term "supplied" to encompass the act of copying solely in "the context of software distribution" (Pet. App. 6a) cannot be accepted. Words in a statute must be construed to have a single meaning. Even where a statute is ambiguous, the agency or court tasked with its interpretation must adopt one of the possible meanings. Just as a federal statute cannot have one meaning in California and another in Texas, the term "supplied" in § 271(f) cannot have one meaning for software copied overseas to be incorporated into patented computer products and another meaning for all other "components." Thus, by recognizing software must be in tangible form to be a "component" under § 271(f), the Federal Circuit's fluid approach to interpreting "supplied" based on the technology at issue is avoided.

If, after § 271(f) was enacted, the overseas purchaser of the patented shrimp deveining device in *Deepsouth* had used the exported and unassembled pieces to make 99 identical copies of each piece that had been shipped from the United States, and thus assembled a total of 100 such devices for use or sale outside the United States, there still should be liability for only one act of infringement under U.S. law, not for one hundred. The overseas copying of a software "component" to be combined into a patented product or system cannot be treated differently under the same statutory terms than would be the overseas copying of the physical

components of any other "machine, manufacture, combination, or composition."

If "supplying" includes foreign copying of all U.S.-originated software, then the term necessarily would encompass foreign copying of any and all "components" of patented products. By the Federal Circuit's own admission, that is not what it held. Pet. App. 6a. For the reasons stated quite adequately elsewhere, that software-specific and result-oriented interpretation of "supplied" cannot be allowed to remain the law. *See* Pet. App. 11a-19a, at 13a (Rader, J., dissenting) ("copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying"); Reply Br. for Pet. 8-10; U.S. Brief, at 10-18.

The flaws in the Federal Circuit's reasoning can be demonstrated using the court's own analogy. According to the Federal Circuit, uploading a single copy of software to a server on the Internet should be sufficient to create liability for any number of exact copies that are downloaded because the server "supplies" the software to the user's computer. Pet. App. 6a. However, while each copy downloaded from the server may result in a "supply" of the software to each individual user, the statute also requires that such supply be "in or from the United States." The Federal Circuit ignores that if the server is located in a foreign country, and the copies are being downloaded to locations outside this country, the copies are not being supplied "in or from the United States." Similarly, if Microsoft's golden master disks are located in a foreign country when the foreign copies are made, there simply has been no "supply" of the software copies in or from the United States.

Finally, even if software code is transmitted electronically from the United States to a foreign country, only the particular media on which it is stored following such transmission could be deemed a "component" supplied from the United States if later combined directly into a patented

product or system. However, absent a separate transmission of the software from the United States for each patented computer system that is assembled, the software in each system has not been supplied from the United States. If, as occurred here, further copies of the initially transmitted software are made overseas, those copies are embodied upon separate and distinct computer structures and therefore have not been supplied from the United States. To conclude otherwise would ignore the express territoriality restrictions in the statute, not to mention the presumption against extraterritorial application of U.S. law. *See* Pet. 23-29; U.S. Brief, at 16-17.

If § 271(f) is expanded to cover foreign copies of software and all process and method patent it will improperly interfere with the ability of many countries to regulate their own commercial affairs. As one example, while business methods are patentable in this country, the European Patent Convention ("EPC") has excluded business methods from patent protection.[7] If the Federal Circuit's interpretation of § 271(f) is upheld, a U.S. company that supplies software to the England could be held liable for infringing a U.S. patent on a business method when the software performing that method is used entirely in England, even though England does not even allow patent protection for business methods.

Similarly, the TRIPS agreement permits members to exclude from patent protection "diagnostic, therapeutic, and surgical methods for the treatment of humans or animals."[8]

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[7] EPC, at Art. 52(2)(c) (available at http://www.european-patent-office.org/legal/epc/e/ar52.html#A52) (last visited December 12, 2006).

[8] Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Including Trade In Counterfeit Goods, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, Legal Instruments – Results of the Uruguay Round vol. 31, 33 I.L.M. 1197 (1994), at Art. 27(3)(a).

Many countries, including those that adhere to the EPC, have chosen not to extend patent protection to methods of administering or treating patients.[9] Once again, the Federal Circuit's view of § 271(f) will interfere with these nations' choices in how to obtain medicines and treat diseases. U.S. patent protection on methods of treatment will effectively be exported with any medicine shipped from the U.S. The supply of unpatented medicine from the U.S. could be enjoined for infringing a U.S. patent covering a method of treatment even though the treatment occurs in a country that consciously decided not to allow such patent protection.

Principles of international comity cannot be ignored. *See, e.g., F. Hoffman-La Roche Ltd. v. Empagran S.A.*, 542 U.S. 155, 164, 174 (2004); *Murray v. Schooner Charming Betsy*, 6 U.S. (2 Cranch) 64, 118 ("an act of Congress ought never to be construed to violate the law of nations if any other possible construction remains"). Historically, U.S. patent law has been interpreted to limit its extraterritorial reach. *See, e.g., Brown v. Duchesne*, 60 U.S. (How.) 183, 197 (1857); *Dowagiac Mfg. Co. v. Minn. Moline Plow Co.*, 225 U.S. 641, 650 (1915). There is no basis for the Federal Circuit's expansive re-interpretation of § 271(f) that incorrectly and improperly interferes with the commerce and laws of other sovereign nations, whether with respect to application of their own patent laws or in respecting that other countries may have elected not to extend patent protection as broadly as the United States.

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[9] *See, e.g.*, EPC, at Art. 52(4) (available at http://www.european-patent-office.org/legal/epc/e/ar52.html#A52) (last visited December 12, 2006).

CONCLUSION

For the foregoing reasons, the decision of the United States Court of Appeals for the Federal Circuit should be reversed.

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IN THE
Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORP.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF THE SOFTWARE FREEDOM LAW CENTER AS *AMICUS CURIAE* IN SUPPORT OF PETITIONER

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INTEREST OF THE *AMICUS CURIAE*[1]

Much of the world's most important and most significant software is distributed under terms that give recipients freedom to copy, modify and redistribute the software ("Free and Open Source Software"). One could not send or receive e-mail, surf the World Wide Web, perform a Google search or take advantage of many of the other benefits offered by the Internet without Free and Open Source Software, which also includes the Linux operating system that is today's strongest competitor to Petitioner's Windows operating system. Indeed, this brief was written entirely with Free and Open Source Software word processors, namely OpenOffice, gedit and LaTeX, each of which are not just competitive with non-free software programs like those offered by Petitioner on terms of functionality, but which also provide their users with the freedom to improve the program to fit their needs and desires.

The Software Freedom Law Center ("SFLC") is a not-for-profit legal services organization that provides legal representation and other law-related services to protect and advance Free and Open Source Software. SFLC provides pro bono legal services to non-profit Free and Open Source Software developers and also helps the general public better understand the legal aspects of Free and Open Source Software. SFLC has an interest in this

[1]Pursuant to Supreme Court Rule 37.6, *amicus* states that no counsel for a party authored this brief in whole or in part, and that no person or entity, other than *amicus curiae* and its counsel made a monetary contribution to the preparation or submission of this brief. General consents of the parties to the filing of any and all amici briefs was received by this Court on November 28, 2006, from counsel for the Petitioner and on November 30, 2006, from counsel for the Respondent.

matter because the decision of this Court will have a significant effect on the rights of the Free and Open Source Software developers and users SFLC represents. More specifically, SFLC has an interest in ensuring that limits are maintained on the reach of patent law through Section 271(f) so that Free and Open Source software development is not unreasonably and unnecessarily impeded.

SUMMARY OF ARGUMENT

Software can not be a "component[] of a patented invention" under 35 U.S.C. § 271(f) because software is not patentable subject matter under 35 U.S.C. § 101. As such, the Federal Circuit's holding to the contrary in this case is erroneous and should be reversed.

I. Software Cannot Be A "Component[] Of A Patented Invention" Under § 271(f) Because Software Is Not Patentable Subject Matter Under § 101.

The Court of Appeals for the Federal Circuit in this case resolved the issue of whether software may be a "component" of a patented invention under § 271(f) by relying on its contemporaneous *Eolas* decision, which held that "without question, software code alone qualifies as an invention eligible for patenting [under 35 U.S.C. § 101]," and that "every form of invention eligible for patenting [under 35 U.S.C. § 101] falls within the protection of Section 271(f)." *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1369 (Fed. Cir. 2005) (*citing Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005)).

While the Federal Circuit is correct that only subject matter eligible for patenting under § 101 can be captured by § 271(f), the Federal Circuit's holding in *Eolas* that software is patentable subject matter conflicts with long-standing precedents of this Court. As noted in the recent opinion of Justice Breyer dissenting from this Court's decision to dismiss as improvidently granted a patentable subject matter challenge, this Court has not approved of the Federal Circuits Section 101 jurisprudence. *See Lab. Corp. of Am. Holdings v. Metabolite Labs., Inc.*, 126 S.Ct.

2921, 2928 (2006) (Breyer, J., *dissenting*) (*discussing* the Federal Circuit's "useful, concrete, and tangible result" test for patentable subject matter and *stating* that "this Court has never made such a statement and, if taken literally, the statement would cover instances where this Court has held the contrary").

To support its holding in *Eolas* that "without question, software code alone qualifies as an invention eligible for patenting," the Federal Circuit relied merely on its own previous decisions. *Eolas*, 399 F.3d at 1339 (*citing In re Alappat*, 33 F.3d 1526 (Fed. Cir. 1994) and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999)). *Eolas* and the earlier cases on which it relied completely ignored this Court's precedent (discussed below) that sets out firm limits on patentable subject matter and that - in fact - excludes software from patentable subject matter.

Therefore, since *Eolas* fails to abide by this Court's precedent regarding patentable subject matter, the Federal Circuit's reliance on *Eolas* for the holding in this case that software can be a "component[] of a patented invention" under § 271(f) is legally erroneous and should be reversed.

A. This Court's Precedent Sets Out Limits On Patentable Subject Matter.

Confronted with the rise of new technologies, this Court has addressed the issue of patentable subject matter several times. *Gottschalk v. Benson*, 409 U.S. 63, 71 (1972); *Parker v. Flook*, 437 U.S. 584, 591 (1978); *Diamond v. Chakrabarty*, 447 U.S. 303 (1980); *Diamond v. Diehr*, 450 U.S. 175 (1981). Since before the Civil War, this Court has consistently made it clear that subject matter which

would have the practical effect of preempting laws of nature, abstract ideas or mathematical algorithms is ineligible for patent protection. *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 113 (1854); *Benson*, 409 U.S. at 71. This age-old and time-tested precedent effectively establishes a penumbra of ineligibility for patent protection to safeguard the fundamental policy that laws of nature, abstract ideas and mathematical algorithms be left unrestrained by patents.

This Court stated in *Flook* that to be eligible for patent protection, "[a] process itself, not merely the mathematical algorithm, must be new and useful." 437 U.S. at 591; *Funk Bros. Seed Co. v. Kalo Co.*, 333 U.S. 127, 130 (1948). This Court further stated in *Flook* that it is "incorrect[to] assume[] that if a process application implements a principle in some specific fashion, it automatically falls within the patentable subject matter of § 101." 437 U.S. at 593. This Court explained that such an assumption is based on an impermissibly narrow interpretation of its precedent, including specifically *Benson*, and is "untenable" because "[i]t would make the determination of patentable subject matter depend simply on the draftsman's art and would ill serve the principles underlying the prohibition against patents for 'ideas' or phenomena of nature." *Id.*

In alignment with *Benson* and *Flook*, this Court's decision in *Diehr* held that structures or processes must, when considered as a whole, perform functions intended to be covered by patent law in order to be eligible for patent protection. 450 U.S. at 192. *Diehr* followed and upheld the core holdings of both *Benson* and *Flook*. *Id.* at 190, 191-193 (*citing Benson* and *Flook* repeatedly and *stating* "[o]ur reasoning in *Flook* is in no way inconsistent with our reasoning here").

Benson, *Flook*, *Diehr* and the other decisions of this

Court regarding patentable subject matter consistently established that the inquiry into whether subject matter is eligible for patenting is one of substance, not form. This Court requires that one look, not simply at the language of the patent claim to see if it recites a structure of multiple steps or components, but also at the practical effect of the claim to see if it in fact covers - or otherwise would restrict the public's access to - a principle, law of nature, abstract idea, mathematical formula, mental process, algorithm or other abstract intellectual concept.

This substantive standard ensures that skilled patent draftsmanship is not capable of overcoming one of the core principles of patent law recognized by this Court for more than 150 years that "[a] principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right." *Le Roy v. Tatham*, 55 U.S. (14 How.) 156, 175 (1853); *Funk Bros.*, 333 U.S. at 130; *Benson*, 409 U.S. at 67 ("[p]henomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work").

B. The Federal Circuit Has Strayed From This Court's Limits On Patentable Subject Matter.

Many scholars have noted that the creation of the Federal Circuit "did away as a practical matter with Supreme Court jurisdiction in patent cases." Kenneth W. Dam, *The Economic Underpinnings of Patent Law*, 23 J. Legal Stud. 247, 270 (1994). For example, through a series of decisions, the Federal Circuit has abandoned the substantive based standard established by this Court for determining patentable subject matter and replaced it with

a more expansive formalistic approach that looks only to see whether a patent claim contains some structure or has some minimal practical utility. The Federal Circuit's form-over-substance approach has come to include virtually anything within patentable subject matter.

Initially, the Federal Circuit used the opinions of legal commentators to justify straying from *Benson* and *Flook*. *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 958 F.2d 1053, 1057 n.4 (1992) ("Although commentators have differed in their interpretations of *Benson, Flook*, and *Diehr*, it appears to be *generally agreed* that these decisions represent *evolving views* of the Court, and that the reasoning in *Diehr* not only elaborated on, but in part superseded, that of *Benson* and *Flook*") (emphasis added) (*citing* R.L. Gable & J.B. Leaheey, *The Strength of Patent Protection for Computer Products*, 17 Rutgers Computer & Tech. L.J. 87 (1991); D. Chisum, *The Patentability of Algorithms*, 47 U. Pitt. L. Rev. 959 (1986)). Evidently, the Federal Circuit felt that "general agreement" amongst legal commentators justified abandoning this Court's precedent. In reaching this conclusion, the Federal Circuit also ignored the *Diehr* Court's statement that its decision there was in accord with *Benson* and *Flook*. *Diehr*, 450 U.S. at 185 - 193.

Also in *Arrhythmia*, the Federal Circuit stated that "claims to a specific process or apparatus... will *generally satisfy* section 101." *Id.* at 1058 (emphasis added). This Court's precedent does not, in fact, support the proposition that any process or apparatus "generally satisfies" the requirements of patentable subject matter. *Diehr*, 450 U.S. at 193 ("[a] mathematical formula as such is not accorded the protection of our patent laws... and this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment") (citing *Benson* and *Flook*). The new "general rule"

promulgated in *Arrhythmia* was a major step in the Federal Circuit's departure from this Court's precedent regarding patentable subject matter.

Roughly two years later, the Federal Circuit said that this Court's precedent on patentable subject matter was too unclear to follow. *In re Alappat*, 33 F.3d 1526, 1543 n.19 and n.20 (Fed. Cir. 1994) ("The Supreme Court has not been clear", "The Supreme Court has not set forth, however, any consistent or clear explanation", "the understandable struggle that the [Supreme] Court was having in articulating a rule"). Contrary to the Federal Circuit's characterizations, however, this Court's precedent on patentable subject matter is plainly clear: the analysis is one of substance, not form, and asks whether a patent claim is substantially directed to a law of nature, natural phenomenon, abstract idea or mathematical algorithm.

After disregarding this Court's precedent as "unclear," the Federal Circuit substituted its own formalistic approach, which finds that virtually anything is eligible for patenting. *Id.* at 1542 ("[t]he use of the expansive term 'any' in § 101 represents Congress's intent not to place any restrictions on the subject matter for which a patent may be obtained"). The Federal Circuit's approach conflicts with this Court's precedent. As just one example, it ignores the firm statement in *Diehr* that "[a] mathematical formula does not suddenly become patentable subject matter simply by having the applicant acquiesce to limiting the reach of the patent for the formula to a particular technological use." 450 U.S. at 193.

In support of its holding, the Federal Circuit cited this Court's *Chakrabarty* decision for the proposition that, "Congress intended § 101 to extend to 'anything under the sun that is made by man." *Id.* (citing *Chakrabarty*, 447 U.S. 303, 309). However, the Federal Circuit then went much farther than *Chakrabarty's* holding by saying,

"Thus, it is improper to read into § 101 limitations as to the subject matter that may be patented where the legislative history does not indicate that Congress clearly intended such limitations." *Id.* But such was precisely *not* this Court's holding in *Chakrabarty*. Immediately following the language quoted by the Federal Circuit, this Court continued to say in *Chakrabarty* that, "[t]his is *not* to suggest that § 101 has *no* limits or that it embraces every discovery." 447 U.S. at 309 (emphasis added). In support of that statement, this Court referred to *Flook, Benson, Funk Bros.* and other cases, and not to any legislative history. Thus, this Court's precedent clearly shows that there are indeed limits on patentable subject matter beyond those expressly stated by Congress. The Federal Circuit's ruling to the contrary was error.

Indeed, *Alappat* was a highly divided *en banc* decision, wherein several members of the Federal Circuit recognized that the majority was making a severe judicial error. *Id.* at 1552, 1562 (Archer, C.J., *dissenting*). Chief Judge Archer said, "Losing sight of the forest for the structure of the trees, the majority today holds that any claim reciting a precise arrangement of structure satisfies 35 U.S.C. §101.... [T]he rationale that leads to this conclusion and the majority's holding that Alappat's rasterizer represents the invention of a machine are illogical, inconsistent with precedent and with sound principles of patent law, and will have untold consequences," and that "the majority's test under § 101 that looks simply to whether specific structure is claimed is [] inconsistent with Supreme Court precedent"). *Id.*

Since *Alappat*, the Federal Circuit has continued its expansion of patentable subject matter through the implementation of its formalistic approach. *State St. Bank & Trust Co. v. Signature Fin. Group*, 149 F.3d 1368 (Fed. Cir. 1998) (holding that anything with a "practical utility" is

patentable subject matter); *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999). The effect of this expansion has been to eliminate the *Benson-Flook-Diehr* limitation on patentable subject matter, because any semi-competent patent drafter can easily craft claims that have a "practical utility" while being substantially directed to the use of a law of nature, abstract idea, natural phenomenon or mathematical formula. The Federal Circuit believes such claims are patentable subject matter. This Court's precedent mandates that they are not.

C. Since Software Does Nothing Other Than Execute Mathematical Algorithms, It Is Not Patentable Subject Matter And, Thus, Can Not Be A "Component[] Of A Patented Invention" Under § 271(f).

This Court has repeatedly addressed the issue of whether software is patentable subject matter. First, in *Benson* this Court said:

> The patent sought is on a method of programming a general-purpose digital computer to convert signals from binary-coded decimal form into pure binary form. A procedure for solving a given type of mathematical problem is known as an "algorithm." The procedures set forth in the present claims are of that kind; that is to say, they are a generalized formulation for programs to solve mathematical problems of converting one form of numerical representation to another. From the generic formulation, programs may be developed as specific applications.

409 U.S. at 65. This Court rejected in *Benson* the patentability of a software patent directed to a specific application of a generic formulation because "the mathematical formula involved here has no substantial practical application except in connection with a digital computer." *Id.* at 71. The holding of *Benson* is properly applicable to all software, because a computer program, no matter what its function, is nothing more or less than the representation of an algorithm. It is not conceptually different from a list of steps written down with pencil and paper for execution by a human being. In no uncertain terms, this Court in *Benson* held that software, which contains and upon command executes algorithms that solve mathematical problems through the use of a computer, was not patentable under § 101.

Then, in *Flook*, this Court held that software could not become patentable subject matter simply by adding to the proposed claims some "post-solution activity." 437 U.S. at 590. This Court explained:

> The notion that post-solution activity, no matter how conventional or obvious in itself, can transform an unpatentable principle into a patentable process exalts form over substance. A competent draftsman could attach some form of post-solution activity to almost any mathematical formula; the Pythagorean theorem would not have been patentable, or partially patentable, because a patent application contained a final step indicating that the formula, when solved, could be usefully applied to existing surveying techniques. The concept of patentable subject matter under § 101 is not "like a nose of wax which may be turned and twisted in any direction...."

Id. (citing White v. Dunbar, 119 U.S. 47, 51. (1886)) Thus, claims to implement some method or accomplish some process substantially through the use of software, which does nothing more than encode and execute upon command an algorithm to solve a mathematical problem, are no more patentable than direct claims to software that solves such a problem itself.

Further, just as claiming fifty – or even a thousand – laws of nature is no more patentable than claiming a single law of nature, no form of software, regardless of how many algorithms or forumlas it is comprised of, is patentable because it will always be merely and solely made up of mathematical algorithms.

This Court's decision in *Diehr* upheld the holdings in *Benson* and *Flook*, and merely found that the claimed invention in that case was not substantially directed to just software, but instead was - in totality - directed towards an "industrial process for the molding of rubber products," which is undeniably included within the realm of patentable subject matter. 450 U.S. at 191-93. Had the applicant sought to claim the software used in that process by itself, however, this Court would have most assuredly found it to be unpatentable subject matter just as it had in *Benson* and *Flook*.

Thus, this Court's precedent repeatedly sets out that software, which is nothing more than a set of instructions – an algorithm – to be performed by a computer in order to solve some mathematical problem, is subject matter than is not patentable under § 101. In this case, we need not address whether the alleged "component[] of a patented invention" under § 271(f) is substantially software or not, because the parties concede it is software *per se*. As such, since it is not patentable subject matter under § 101, it likewise can not be a "component[] of a patented

invention" under § 271(f) and the Federal Circuit's holding in this case to the contrary was judicial error.

CONCLUSION

For the foregoing reasons, this Court should reverse the Federal Circuit's decision.

Respectfully submitted.

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IN THE

Supreme Court of the United States

MICROSOFT CORPORATION,
Petitioner,

v.

AT&T CORP.,
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF THE SOFTWARE & INFORMATION INDUSTRY ASSOCIATION AS *AMICUS CURIAE* SUPPORTING PETITIONER

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BRIEF OF THE SOFTWARE & INFORMATION INDUSTRY ASSOCIATION AS *AMICUS CURIAE* SUPPORTING PETITIONER

INTEREST OF *AMICUS*

Amicus curiae the Software & Information Industry Association (SIIA) is the principal trade association for the software and digital-content industry.[1] SIIA provides global services in government relations, business development, corporate education, and intellectual-property protection to the leading companies that are setting the pace for the digital age. With over 800 members, SIIA is the leading trade

[1] Pursuant to Supreme Court Rule 37.6, SIIA confirms that no counsel for a party authored this brief in whole or in part and that no person or entity other than SIIA, its members, or its counsel has made a monetary contribution to the preparation or submission of the brief. The brief is filed with the consent of the parties. See S. Ct. R. 37.3(a).

association representing software-code and information-content companies.[2]

The innovative companies that make up SIIA's membership rely upon patent protection to guard their inventions, but also depend upon the ability to develop their products free from improper assertions of patent rights. Consequently, SIIA's members are involved in patent litigation as both patentees and accused infringers; they cannot be categorized generally as plaintiffs or defendants. SIIA is thus in a balanced position, as *amicus curiae*, to address the proper interpretation of 35 U.S.C. §271(f) as it relates to software.

STATEMENT

This case presents an increasingly common fact pattern in the international distribution of technology developed in the United States. A technology creator (such as Microsoft in this case) develops computer code at its facilities in the United States. The creator then burns the computer code onto one or more "golden master" disks (CD-ROMs or DVD-ROMs or other media for transmitting computer code), also in the United States. The creator exports only master versions of the computer code to foreign manufacturers. Each foreign manufacturer uses the master version, outside of the United States, to manufacture the products based on the computer code. These products are typically computers loaded with traditional software, or even other digital media such as movies and computer games, all based on the golden master.

Products created according to this scenario also include semiconductors, which are frequently fabricated abroad based on computer code transmitted from the United States. While such fabrication does not involve the incorporation in a final

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[2] A complete list of SIIA members can be found at http://www.siia.net/membership/memberlist.asp.

product of copies of computer code exported from the United States, it does involve the foreign manufacture of products based on computer code developed in the United States.

As technology advances, the number and diversity of products manufactured abroad based on computer code developed in the United States will surely increase. Although the extent of the change in form from the originally exported computer code to the final products varies from technology to technology, in each case computer code is exported and products based on that code are manufactured abroad.

In all of these increasingly common circumstances, no physical component shipped from the United States is ever incorporated or assembled into any product sold abroad to consumers. In particular, the "golden masters" that are actually shipped from the United States are never made a part of any product sold to consumers. The manufacture of products based on that code occurs *outside* the United States.

The same is true in this case. Although no Windows "golden master" disks shipped by Microsoft from the United States were ever assembled into a final computer, see Pet. App. at 45a, AT&T nevertheless accused all foreign-made *copies* of those disks as being "components of [the] patented invention" that were "supplied in or from the United States" in violation of 35 U.S.C. §271(f). The Federal Circuit agreed. Pet App. 1a (reported at *AT&T Corp.* v. *Microsoft Corp.*, 414 F.3d 1366 (CA Fed. 2005)).

SUMMARY OF ARGUMENT

In affirming the judgment of liability against Microsoft, the Federal Circuit improperly expanded the power of United States patents. Specifically, the Federal Circuit extended the extraterritorial application of United States patent law to cover foreign-made products containing foreign-made *copies* of a component originating in this country. In so doing, the

court effectively rewrote §271(f)'s clear requirement that "components of a patented invention" be "supplie[d] . . . from the United States" before liability can be assessed. 35 U.S.C. §271(f)(1). As construed by the court of appeals, the statute broadly imposes liability for exporting anything from which a *copy* of a component of a patented invention may be made and then assembled into a patented combination. The court candidly admitted that it adopted this construction "to account for the realities of software distribution," of which copying is "part and parcel." Pet. App. at 6a-7a. But although it is generally easier, cheaper, and faster to make copies of computer code than to make copies of traditional physical components, those considerations are not—and should not be—relevant to the application of §271(f). It is the province of Congress, not of the courts, to define the scope of liability under United States patent law. The Federal Circuit tacitly acknowledged this fundamental principle,[3] but disregarded it and imposed liability through an expansive interpretation of the statute.

That interpretation exposes American producers to potential global liability and upsets investments and plans made in reasonable reliance on previously settled law that limited the extraterritorial application of United States patent law to the narrow exception created in §271's 1984 amendments. Prior to the Federal Circuit's controversial series of decisions in *Eolas Technologies, Inc.* v. *Microsoft Corp.*, 399 F.3d 1325 (CA Fed.), *cert. denied*, 126 S.Ct. 568 (2005), *Union Carbide Chemicals & Plastics Technology Corp.* v. *Shell Oil Co.*, 425 F.3d 1366 (CA Fed. 2005), and this case, American firms understood that they were not constrained by United States patents from competing in

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[3] As the court correctly noted, "'the remedy for any dissatisfaction with the results in particular cases lies with Congress' and not with this court." Pet. App. at 11a (quoting *Griffin* v. *Oceanic Contractors, Inc.*, 458 U.S. 564, 576 (1982)).

foreign markets, such as by making and selling patented products outside of the United States. Inventors similarly understood that they had to seek and obtain available patent protection in every distinct geographic market where they wanted a monopoly to practice their inventions.

Moreover, the broad extraterritorial extension of United States patent law upsets the international patent regime and disrespects foreign legal systems, which should have primary responsibility for enforcing intellectual-property rules regarding conduct occurring in foreign jurisdictions. Until the recent trio of Federal Circuit decisions, basic principles of international comity coexisted with §271(f), which was enacted only to close a narrow loophole. That loophole—recognized by this Court in *Deepsouth Packing Co.* v. *Laitram Corp.*, 406 U.S. 518 (1972)—allowed American companies to take clever advantage of shipment from the United States of unassembled components of a patented invention for foreign assembly, thus evading liability for actually "making" and "selling" the invention in the United States. In closing the loophole, Congress did not purport to radically alter the legal framework limiting the extraterritorial reach of United States patent law. Rather, at least until the Federal Circuit's recent extensions of §271(f), the statute was understood to bar only the export of the physical components of a United States-patented product for assembly abroad, not the use of *foreign-produced* components in foreign assembly.

The Federal Circuit's expansive construction of §271(f) now exposes American businesses of all kinds—not merely software companies—to potentially unlimited worldwide liability based on a *single* export. Given the role of the Federal Circuit as the national court of appeals in patent cases, only this Court can correct the Federal Circuit's now entrenched (but erroneous) reading of §271(f). In doing so, the Court will prevent vast economic harm to the high-tech

industries that are, and hope to remain, vital to the health of the United States economy.

Because the Federal Circuit's misinterpretation of §271(f) is contrary to the text and Congress's stated objectives in amending the patent statute, deviates from previously settled United States patent law, and has severe consequences for American companies that operate on a worldwide basis, the Court should reverse the judgment of the Federal Circuit.

ARGUMENT

I. THE FEDERAL CIRCUIT'S EXPANSIVE READING OF §271(F) UNJUSTLY UPSETS THE SETTLED AND REASONABLE EXPECTATIONS OF AMERICAN PRODUCERS.

The Federal Circuit's decision in this case threatens to usher in a new era in which foreign manufacturing, connected to the United States by little more than domestic design and development, will be pulled within the grasp of United States patent law. That result defies the plain language and legislative history of §271(f) and cannot be justified under the guise of interpreting a remedial statute to keep pace with advances in technology. Quite the contrary, confining the scope of §271(f) to supplying physical components for foreign combination into patented inventions satisfies the goals of the statute and adequately protects the rights of inventors without treading unnecessarily on principles of international comity. On the other hand, imposing unlimited liability under United States patent law for all foreign products that include foreign-made components made from a single master version of computer code exported from the United States, as the Federal Circuit has done, defies the statutory text of §271(f). That departure from previously settled law will likely further create perverse incentives for valued domestic industries to move their design and development activities overseas.

A. The Federal Circuit's Expansive View of §271(f) Disregards the Statutory Text.

The far-reaching extraterritorial extension of patent liability declared by the Federal Circuit is contradicted by the text of §271(f) itself. In particular, two key phrases of the statute were misconstrued by the court. First, the court ignored the plain meaning of the statutory term "component" in holding that the generalized information contained in computer code is, itself, a "component[] of a patented invention," without regard to the *physical manifestation of the code* in a particular computer. 35 U.S.C. §271(f). Second, the court unduly stretched the term "supplies" in holding that *copies* of a component of a patented product are "supplie[d] . . . from the United States" even when the copies are made in a foreign country. *Ibid.*

1. The Term "Components" Covers Only Physical Manifestations of Computer Software.

The proper meaning of the term "component" is necessarily informed by the surrounding words of the statute. *Whitman* v. *American Trucking Assn.*, 531 U.S. 457, 466 (2001) ("Words that can have more than one meaning are given content, however, by their surroundings . . . .") (citing *FDA* v. *Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 132-133 (2000) and *Jones* v. *United States*, 527 U.S. 373, 389 (1999)). Adherence to this principle of construction is important "to avoid giving unintended breadth to an Act of Congress." *United States* v. *Locke*, 529 U.S. 89, 105 (2000).

The statutory context makes clear that the term "components" in §271(f) contemplates physical products that are capable of being "combin[ed]." Similarly indicative of physical form are the references in §271(f)(2) to "components" as "*articles* or commodities of commerce." 35 U.S.C. §271(f)(2) (emphasis added).

Physical form is also suggested in the legislative history by the juxtaposition of the terms "components" and "assemble," terms that usually connote tangible objects and physical attachment. See Section-by-Section Analysis: Patent Law Amendments Act of 1984, H.R. 6286, 98th Cong., 130 Cong. Rec. H10,525 (Oct. 1, 1984), as reprinted in 1984 U.S.C.C.A.N. 5827, 5828 (explaining that §271(f) "prevent[s] copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the *assembly of the components* may be completed abroad") (emphasis added). The legislative history further confirms a physical meaning for "components" by describing them in terms of a "patented *machine*." See President's Message to Congress, Patent Law Amendments Act of 1984, Statement on Signing H.R. 6286 Into Law, 20 Weekly Comp. Pres. Doc. 1818, 1818 (Nov. 9, 1984) ("[Section 271(f)] closes a loophole in existing law which permits copiers to export jobs and avoid liability by arranging for *final assembly of patented machines* to occur off-shore . . . .") (emphasis added). In addition, reference in the legislative history to Congress targeting "*manufacture* of component *parts* within the United States for assembly outside the United States," also suggests components having a physical nature. 130 Cong. Rec. H6286, at 28,073 (Oct. 1, 1984) (statement of Rep. Kastenmeier) (emphasis added).

This view is consistent with pre-*AT&T* Federal Circuit precedent. As the court noted in *Pellegrini* v. *Analog Devices, Inc.*, 375 F.3d 1113 (CA Fed. 2004), §271(f) is "clear on its face" and applies "only where components of a patent invention are *physically present* in the United States and then either sold or exported 'in such a manner as to actively induce the combination of such components outside the United States in a manner that would infringe the patent if such combination occurred within the United States.'" *Id.*, at 1117 (emphasis added); see also *Bayer AG* v. *Housey Pharms., Inc.*, 340 F.3d 1367, 1372-1373 (CA Fed. 2003)

(noting that the term "component" in §271(g)(2) "appears to contemplate a physical product").

Because the term "component" contemplates physical products, it does not aptly describe the exported golden masters' relationship to the accused products. Only a few copies of master disks and electronic messages were ever "physically present" in the United States. But those things never even touched—much less became a part of—the accused computer systems. Pet. App. at 45a.

Consistent with the statute, a "component[] of a patented invention" in the context of computer code must refer to the particular instance of the computer code that is downloaded onto, and thus physically a part of, an accused computer system. The court of appeals, however, bypassed the "copy vs. original" distinction by adopting a metaphysical view of software in which the software was deemed fundamentally *intangible information* yet still fully qualified as a "component" under §271(f). Pet. App. at 4a (citing *Eolas*, 339 F.3d, at 1339, for the proposition that "*software code alone* qualifies as an invention eligible for patenting") (emphasis added); but see *Eolas*, 339 F.3d, at 1339 (emphasizing "computer readable" (*i.e.*, physical) nature of the component). Viewed as purely intangible information, the "component" was conceptually "supplied . . . from" the United States and combined into the foreign-made computers. But that analysis does not comport with the technical reality of computer software.

Part of what seems to have confused the Federal Circuit is the distinction between the physical embodiment of the computer program (*i.e.*, the master disks containing the object code) and the intangible information contained within it (*i.e.*, the computer instructions consisting of 0s and 1s). One source of this confusion may have been imprecise use of the term "software." Software may be used to mean the computer program itself; it may also mean the physical

embodiment of that program that actually interacts with the computer hardware. As a component of a computer system, a computer program cannot be, however, merely the intangible information it represents. Rather, a computer program must take physical form to operate within a computer system, as the Federal Circuit acknowledged in *Eolas*.[4] And until it takes physical form as part of the claimed computer system, a computer program cannot be a component of the claimed invention.

To achieve this physical form, computer code—which may be embodied by plastic storage media with dimples for optical reading (*e.g.*, DVDs)—is first copied and then installed in a computer through a physical process of altering tangible objects, such as magnetic storage media (hard drives, etc.). This alteration adds a digital pattern to the storage media by rearranging the physical substance of those objects. See, *e.g.*, *In re Warmerdam*, 33 F.3d 1354, 1361 n.6 (CA Fed. 1994) ("[T]he storage of data in a memory physically alters the memory, and thus in some sense gives rise to a new memory."); *In re Bernhart*, 417 F.2d 1395, 1400 (CCPA 1969) ("[I]f a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged. The fact that these physical changes are invisible to the eye should not tempt us to conclude that the machine has not been changed."); see also Br. for the United States as

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[4] The *Eolas* panel noted that computer code has intangible aspects and physical aspects, and observed that, in the context of the patented invention before it, the "computer transforms the code on the golden [master] into a machine component in operation." 399 F.3d, at 1339. Respondent itself argued that computer software is not merely intangible. Br. in Opp. to the Pet., at 12. But in its supplemental brief in response to the brief of the United States, Respondent shifted positions and asserted that "the issue is whether Microsoft supplied the Windows object code, a binary sequence of numbers that 'lacks physical existence.'" Supp. Br. of Resp. at 4 (citing Br. for the United States as *Amicus Curiae* at 8-9).

Amicus Curiae, at 8-9. Notably, the digital pattern created during installation is not necessarily identical to that on the golden master.[5]

When viewed in this correct technical sense, the Microsoft customers' fine-scale rearranging of the material of their foreign-sourced disks at foreign locations is better characterized as *foreign manufacturing* based on information supplied from the United States, rather than as merely adding a component as supplied from the United States. Section 271(f) imposes liability only for the latter.

Under the Federal Circuit's approach, however, liability is imposed under §271(f) for transmitting from the United States intangible information that is later used to create a tangible form in a foreign country for foreign use, under the misperception that the intangible information is somehow a component supplied from the United States. This approach not only defies the ordinary meaning of the term "component," but also produces anomalous results. For example, the court's approach would find infringement in the "'exportation' of a computer program" by someone who leaves the country having memorized the 0s and 1s "to input and use the program on a computer in a foreign country."

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[5] When a computer program is copied from a golden master onto a computer, it undergoes configuration and changes that often result in unique versions of the original program. The changes to the computer program range from customizing a computer according to customer specifications after receiving the order from the customer (including incorporating essential application and communication protocols to facilitate inoperability of computer programs) to configuring network interface(s), establishing directories and management control, storage, backup and re very options. See Installing Oracle Database 10g Release 2 on Linux x86, <http://www.oracle.com/technology/pub/articles/smiley_10gdb_install.html>; see also Preinstalling Microsoft Windows XP by Using the OEM Preinstallation Kit, Part I, <http://download.microsoft.com/download/E/B/A/EBA1050F-A31D-436B-9281-92CDFEAE4B45/OPK-preinstall-intro.doc>.

Pensabene & Berschadsky, Software Patent Damages for Foreign Sales: Have the District Courts Gone Too Far?, 21 Computer & Internet Lawyer 23, 27 (July 2004). Previously established United States patent law certainly does not support that result. See *Pellegrini*, 375 F.3d, at 1117 (holding that components manufactured abroad cannot be components supplied from the United States even though they were made according to design and manufacturing instructions sent from the United States); *Bayer*, 340 F.3d, at 1376-1377 (avoiding a construction of §271(g) that would find infringement in the converse situation in which a person enters the country having memorized information generated by a patented process).

Simply put, the Federal Circuit went too far in its analysis by expanding the meaning of the term "component" to include the purely intangible informational aspect of computer code. Instead, the Federal Circuit should have limited the application of §271(f) to the particular physical embodiment of the patented computer program, consistent with the express terms of the statute itself and with the technical reality of computer code.

2. Transmitting a Single Copy of Computer Code from the United States Does Not "Supply" All Copies of the Code Later Created Overseas.

Only by adopting the view that a "component" under §271(f) can encompass the purely intangible aspect of computer code can it be asserted that an infinite number of physical manifestations were supplied from a single export of the code from the United States.[6] But because computer code

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[6] Respondent incorrectly asserted that Petitioner's argument hinges on treating computer code in that manner. Br. in Opp. to Pet. at 15-16. To the contrary, it was the Federal Circuit's decision that disembodied the intangible information reflected in computer code from its physical manifestation and erroneously afforded such intangible information the

cannot be characterized as a "component" for purposes of §271(f) until it is physically manifested in a particular form, the Federal Circuit's decision cannot be sustained. The particular embodiment of the code that becomes part of an infringing product must itself be "supplie[d] . . . in or from the United States" to support liability under the statute. 35 U.S.C. §271(f)(1). The court of appeals erred in imposing liability on Microsoft because nothing that Microsoft supplied from the United States was ever combined into an infringing system. The master disks and encrypted transmissions and the code that they contained (the only things sent from the United States) were never actually incorporated into the allegedly infringing products. As Judge Rader accurately observed in his dissent, copying from a master is distinct from *supplying* the copies in the first instance:

> "[C]opying and supplying are separate acts with different consequences—particularly when the 'supplying' occurs in the United States and the copying occurs [abroad]. As a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software. Thus copying and supplying are different acts, and one act of 'supplying' cannot give rise to liability for multiple acts of copying.
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> * * *
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> [Foreign] distributors copy the components supplied from the United States and then install those copies into the infringing products. The [foreign] manufacturers do not install the actual component 'supplied' from the U.S. (the master disc). Instead, they install a copy made in

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independent legal status of "component." Pet. App. at 4a. The court's error on the "suppl[ying]" issue thus lies hand-in-hand with its erroneous analysis of the "component" element of §271(f).

[the foreign country]." Pet. App. at 13a, 15a (Rader, J., dissenting).

The illogic of the Federal Circuit's analysis is amplified by looking at any manufacturing process that involves duplication or the use of information as a template. By way of a simple example, suppose a clockmaker produces a single gear within the United States that is a component of a clock that infringes a United States patent. If the clockmaker completed an infringing clock by inserting that single gear, he would have "made" an infringing product under United States patent law, whether the clocks were sold in the United States or abroad. Moreover, if the clockmaker made 100 copies of the gear in the United States and exported the copies to be integrated into clocks assembled and sold in a foreign country, the clockmaker would be liable under §271(f) because those 100 copies were components supplied from the United States.

But a very different situation arises if the clockmaker produces a single infringing gear within the United States and sends that single gear abroad, whereupon copies of the gear are made abroad and then inserted into foreign-assembled clocks that are sold in a foreign country. In that situation, no liability can attach under §271(f) because the foreign-made gears are not components "supplie[d] . . . from the United States." 35 U.S.C. §271(f)(1). Rather, they are components manufactured abroad. This simple hypothetical example confirms that no component of a patented system is "supplied from" the United States when what is actually made a part of the system is a *copy* of an exported component.

Although no federal court would impose §271(f) liability for entirely foreign-made clocks, the Federal Circuit imposed liability on computer-code creators in legally indistinguishable circumstances. The relative ease and speed of making copies of computer code, as compared to making copies of clock gears, for example, are statutorily irrelevant.

But those legally irrelevant differences are precisely what led the Federal Circuit boldly to rewrite the statute, in effect, candidly confessing that its reading of §271(f) was aimed at addressing technological advances that "developed *after* the enactment of §271(f)." Pet. App. at 10a (emphasis added). The court's judicial amendment of §271(f) jettisons the statute's requirement that the component be supplied from the United States merely because the production of foreign-made components seemed too quick or easy to be considered a separate act of making.

3. The Federal Circuit's Inappropriate Extension of §271(f) Is Premised on a Mistaken View of the "Realities" of Software Distribution and a Misinterpretation of Congressional Intent.

In addition to effectively rewriting §271(f)'s text, the Federal Circuit overlooked statements from the Congressional Record and the President confirming that §271(f) was enacted solely to close the narrow loophole identified in *Deepsouth*.

In *Deepsouth*, the Court rejected an expansive reading of §271(a)'s proscription against "making" to extend to exporting constituent parts for foreign assembly. *Deepsouth*, 406 U.S., at 526. In so doing, the Court cautioned that "the sign of how far Congress has chosen to go can come only from Congress." *Id.*, at 530. Picking up on the Court's implicit invitation in *Deepsouth*, Congress stepped in to remedy an obvious loophole. According to the legislative history, §271(f) was enacted to "prevent copiers from avoiding U.S. patents by supplying components of a patented product in this country so that the assembly of the components may be completed abroad." Section-by-Section Analysis, 1984 U.S.C.C.A.N., at 5827. The stated objective in enacting §271(f) was to overrule *Deepsouth* and thus "to avoid encouraging *manufacturing* outside the United States." *Id.*, at 10,525 (emphasis added). In signing §271(f) into law,

President Reagan confirmed that the amendment "close[d] a loophole in existing law" that allowed evasion of liability for patent infringement "by arranging for *final assembly* of patented machines to occur offshore." President's Message to Congress, 20 Weekly Comp. Pres. Doc., at 1818.

This legislative history confirms that Congress meant to narrowly proscribe only the domestic exportation of physical components for foreign assembly into otherwise-infringing combinations. In this case, however, the Federal Circuit stretched §271(f) to cover not only combinations not assembled here but also components not even made in the United States. This misplaced effort to anticipate how Congress would have wanted patent law to apply to software and other new-economy technologies violated the Court's instruction to avoid the extraterritorial extension of United States patent law absent a clear statement from Congress. *Deepsouth*, 406 U.S., at 530.

B. The Federal Circuit's Interpretation of §271(f) Deviates From Previously Settled United States Patent Law.

In addition to relying on the text and history of §271(f), American producers with overseas operations have reasonably relied on years of precedent confirming the statute's limited extraterritorial scope. The recent series of cases from the Federal Circuit have upset those established expectations. See, *e.g.*, Pet. App. at 4a-10a (broadly construing "component" and "supplie[d] . . . from the United States"); *Union Carbide*, 425 F.3d, at 1366 (extending §271(f) to impose liability for the export of elements used in a patented method); *Eolas*, 399 F.3d, at 1325 (holding that exported software and methods are "components" under §271(f)). Those cases represent an unwarranted sea change in the law that this Court can and should correct.

Before the recent transformation in Federal Circuit decisions, existing precedent applied §271(f) narrowly, reinforcing the textual and historical interpretation that reasonably led software and other information-based companies to believe that United States patent law does not govern their conduct in foreign markets. For example, in *Standard Havens Products, Inc.* v. *Gencor Industries, Inc.*, 953 F.2d 1360, 1374 (CA Fed. 1991), the Federal Circuit held that §271(f) did not reach defendants selling devices to foreign customers who used them to perform patented *processes*. In *Johns Hopkins University* v. *Cellpro, Inc.*, 152 F.3d 1342, 1348, 1351-1352 (CA Fed. 1998), the Federal Circuit reviewed the district court's conclusion that the defendant's production of monoclonal antibody suspensions infringed the plaintiff's patents, even though the suspensions were produced outside the United States by cloning copies of the antibody from a master cell bank that had been sent abroad before the patent issued. The Federal Circuit reversed the district court's repatriation order, which also ordered destruction of the master cell bank and its clones, because the clones were to be sold overseas and posed no threat of future infringement in the United States. *Id.*, at 1366-1367. And just two years ago, the Federal Circuit held that §271(f) did not reach circuit chips manufactured in a foreign market, even though the chips were constructed using designs developed in, and instructions sent from, the United States. *Pellegrini*, 375 F.3d, at 1117.

Copying computer instructions (*i.e.*, code) is, at bottom, no different from using a recipe to make a drug, a mold to make a tire, a cell bank to clone helpful antibodies as in *Cellpro*, or instructions to produce a computer chip as in *Pellegrini*. Indeed, the computer code on the master disk represents nothing more than a *digital pattern* that is replicated onto the copy disk through a physical process that rearranges the physical substance of the copy disk in accordance with the digital instructions on the master disk. Before this case, there

was uniform agreement between the case law and legal commentary that exporting instructions, molds, cell banks, and the like would not trigger United States patent liability for foreign manufacturing. But, given the Federal Circuit's new approach, no principled reason prevents United States patent law from encompassing those and other similar activities performed wholly in foreign countries. The Federal Circuit's new rule, confirmed in recent cases interpreting §271(f), is thus a striking and unwarranted deviation from settled case law.

C. The Federal Circuit's Flawed Analysis Harms America's Important High-Technology Sectors and the National Economy in General.

The Federal Circuit's broad interpretation of §271(f) implicates the important federal interest in preventing major economic injury to the national economy. The decision is especially harmful to America's high-technology sector, which has flourished in the more than two decades since Congress passed the 1984 amendments to the patent statute. The Federal Circuit's broad extraterritorial interpretation of §271(f) now creates potentially worldwide liability not only for software companies but for several vital industries—such as the semiconductor industry—that rely on information created in the United States that is often transferred as computer code. By generating immediate, yet congressionally unintended, legal exposure for United States companies, the decision may dissuade information-based companies from maintaining their operations in the United States, as doing so will burden them with risks and a competitive disadvantage relative to foreign companies.

Prior to the Federal Circuit's recent shift toward an expansive construction, §271(f) had been understood during the decades since its enactment to cover only physical components exported from the United States for final

assembly abroad. The technology companies that have propelled the explosive growth of the American economy have made investments at home and abroad in reliance on the settled framework of United States patent law. Companies in the high-technology sector, in particular, hold settled and reasonable expectations that they may lawfully design and develop their products in the United States and then manufacture, in factories located abroad, products destined for foreign markets, subject to foreign patent regulation, but without incurring liability based on United States patents for such foreign manufacture and sales. That arrangement enabled companies to create hundreds of thousands of desirable knowledge-worker jobs in the United States.

With the Federal Circuit's unjustified expansion of United States patent law to govern foreign activities that Congress never intended to regulate, companies are exposed to potentially crippling present and future global liability for the manufacture and sale of products that was previously unthinkable. Now, the export of a single tangible component—the "golden master" disks—exposes the company to potentially endless liability under United States patents for foreign use of the intangible information embodied by that component. Under the pre-*Eolas* framework, a firm's liability would be capped by its domestic sales. But under the Federal Circuit's new framework for §271(f), America's high-technology companies (many of which depend on both domestic and foreign sales) now face unprecedented global exposure.

The Federal Circuit's expansive interpretation of §271(f) affects numerous important industries of the new economy, an economy in which the United States currently enjoys a comparative advantage over most countries. The new standards significantly impact United States-based developers of not only software, but also of semiconductor chip designs, cell lines, and other products that rely heavily on computer-

based designs, templates and prototypes, and other product "masters." Traditional goods usually involve the assembly of parts on a one-to-one basis. But high-technology producers of information invest massive amounts of time and money to develop single prototypes that, after the huge initial investment, are used only for manufacturing abroad.

The semiconductor industry in particular faces the risk of exposure if the Federal Circuit's erroneously broad construction of §271(f) is left standing. The domestic semiconductor industry creates leading-edge semiconductor designs, but usually relies on foreign manufacturers, known as foundries, to manufacture physical products cost effectively. The domestically created semiconductor designs are typically embodied in computer code sent abroad on computer tapes or through electronic transmissions. Although the difference between a semiconductor design embodied in computer code and the actual silicon computer chips manufactured from those designs is more easily appreciated than the transformation of the golden master in this case, one can readily envision aggressive patentees attempting to push §271(f) to cover that scenario if this Court does not rein in the expansion of this provision.

In addition to exposing American companies to unwarranted foreign liability based on United States patents, the Federal Circuit's new approach also creates disincentives for future investment in America's high-tech industries. Companies may move their design facilities abroad to avoid liability under United States patent law; others that would have invested in design operations in the United States may choose to go elsewhere. The elimination of knowledge-worker jobs, without receiving any benefit in return except to give patent holders a lottery ticket based on United States patents for damages from foreign-produced goods, would damage America's economy.

The Federal Circuit candidly admitted that its modified construction of §271(f) was intended to address advances in fields of technology that "developed *after* the enactment of §271(f)." Pet. App. at 10a (emphasis added). Struck by the speed and ease of production from new-economy templates, the court chose not to wait for Congress to consider and decide whether the existing scheme of patent regulation needed adjustment, and tried to anticipate how Congress might choose to extend extraterritorial patent liability. But as this Court aptly observed in *Deepsouth*, the "sign of how far Congress has chosen to go can come only from Congress." *Deepsouth*, 406 U.S., at 530. The lessons learned from *Deepsouth* and Congress's narrow response apply with particular force in the golden master and similar scenarios. It is for Congress to consider the national interests in preventing unwarranted economic harm and to define the duties of the new knowledge-industry firms that export designs and intangible information to foreign markets.

II. Broad Extraterritorial Application of U.S. Patent Law Upsets the International Patent Regime and Disrespects Foreign Legal Systems.

The Federal Circuit's broad interpretation of §271(f) is also at odds with principles of comity and gratuitously encroaches on the patent systems of foreign nations. Strong incentives previously existed for American patent holders to "seek [protection] abroad through patents secured in countries where [their] goods are being used." *Deepsouth*, 406 U.S., at 531. But allowing the Federal Circuit's new, expansive construction of §271(f) to stand would weaken those incentives. Meanwhile, this broadened extraterritorial effect of United States patent law imposes duties on conduct occurring wholly within foreign countries, conduct that Congress respectfully left to the regulatory schemes of those sister nations.

When faced with similar policy choices and balancing of interests, Congress has generally limited the extraterritorial reach of United States patents. Absent "a clear and certain signal" to the contrary, Congress leaves the difficult choices about extraterritorial patent protection exclusively to foreign governments in whose territory the otherwise-infringing products are produced. *Ibid.* Similarly, giving proper regard for the right of other sovereigns to regulate commerce (including intellectual-property protections) within their markets, the Court has repeatedly emphasized the United States patent system's limited extraterritorial effects and has stated that "we correspondingly reject the claims of others to [extraterritorial] control over our markets." *Ibid.*[7] Implicit in that statement is the Court's recognition that extraterritorial patent protections create substantial risks of international conflict, making it particularly inappropriate for the Federal Circuit to expand the application of United States patent law in foreign markets beyond the bounds set by Congress. Cf. Pet. App. at 10a (interpreting the statute to account for technological advances "that developed after the enactment of §271(f)"). Subject to §271(f)'s narrow exception, *foreign* patents provide the exclusive patent liability for American companies competing "with an American patent holder in foreign markets." *Deepsouth*, 406 U.S., at 531.

The Federal Circuit's parochial disregard for the sovereign authority of other countries to regulate conduct within their own markets creates a serious risk of harm to American producers and consumers. Foreign nations—upset with the encroachment of American patent law on their legal regimes or simply looking for justifications to impose protectionist

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[7] See also *Dowagiac Mfg. Co.* v. *Minn. Moline Plow Co.*, 235 U.S. 641, 650 (1915) (noting that U.S. patent laws do not apply extraterritorially); *Brown* v. *Duchesne*, 19 How. 183, 195 (1856) (recognizing that American patent laws generally are "not intended to[] operate beyond the limits of the United States").

measures—may attempt to impose liability on American companies producing goods within the United States that incorporate components or even intangible ideas covered by patents in their legal systems. That type of legal liability, and the possibility of retaliatory trade barriers, would increase costs for many producers and raise prices for consumers in the United States and abroad.

CONCLUSION

The Court should reverse the judgment of the Federal Circuit.

Respectfully submitted,

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MICROSOFT CORPORATION,

Petitioner,

v.

AT&T CORP.,

Respondent.

ON WRIT OF CERTIORARI
TO THE UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT

BRIEF OF U.S. PHILIPS CORPORATION AND PHILIPS ELECTRONICS NORTH AMERICA CORPORATION AS *AMICI CURIAE* IN SUPPORT OF RESPONDENT

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January 23, 2007

QUESTIONS PRESENTED

(1) Whether digital software code—an intangible sequence of "1's" and "0's"—may be considered a "component[ ] of a patented invention" within the meaning of Section 271(f)(1); and, if so,

(2) Whether copies of such a "component[ ]" made in a foreign country are "supplie[d] . . . from the United States."

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INTEREST OF AMICI CURIAE[1]

With this appeal, software companies (and similarly situated "new economy" companies) are seeking to have this Court create an exception for software in 35 U.S.C. § 271(f). Such an exception would unfairly favor the software industry over traditional electronics hardware companies, such as Philips. Furthermore, the interpretation sought by Microsoft and its amici ignores the proper measure of damages, which would include all foreign sales resulting from the infringing act.

Amici curiae U.S. Philips Corporation and Philips Electronics North America Corporation are part of the Philips worldwide family of companies ("Philips"). Like other parts of the Philips family, the amici curiae are wholly owned by the Dutch parent company, Koninklijke Philips Electronics N.V.

Philips has been inventing and manufacturing electronic and electrical products for over 115 years, and is one of the largest users of the patent systems in the United States and other industrialized countries. Last year Philips filed U.S. patent applications for about 3,000 new inventions. Scientists and engineers at our U.S. laboratories have made pioneering advances in the fields of high definition television, optical CD and DVD recording, digital cellular telephones, medical imaging, and digital rights management.

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[1] Amici curiae submit this brief with the written consent of the parties, as reflected in letters filed with the Clerk of this Court. No counsel for a party authored this brief in whole or in part, and no person or entity other than amici curiae and their counsel has made a monetary contribution to its preparation or submission.

Section 271(f) allows us to protect our intellectual property rights when American-based companies export specialized components and parts kits for assembly in countries that currently do not have useful patent enforcement systems, particularly China, Taiwan, Korea, and India.

Section 271(f) was enacted by Congress more than 20 years ago to plug a loophole that had allowed American companies to avoid liability for patent infringement by creating the essential components of a patented invention in the U.S., but assembling the device overseas. In the decision currently on appeal, the United States Court of Appeals for the Federal Circuit confirmed that Section 271(f) applies to software components as well as hardware components. If this Court reverses that decision and exempts software components from the protection of Section 271(f), it will weaken the patent protection for many of our most innovative products.

For example, Philips invented the optical recording technology that enabled development of the CD and DVD industries. When Philips started licensing this patented technology, the technology was implemented as hardware circuits in disc drives and recorder sets. Today the same technology is implemented through PC software that is distributed over the Internet and through firmware[2] that is stored in semiconductor memory chips.

Another example is speech and image coding technology. Philips invented important speech and image

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[2] Firmware is software that is imbedded into an electronic device. It can be installed and upgraded like any other software.

coding methods and devices that we license to manufacturers of cellular telephones, digital cameras, and set-top boxes.[3] Today, American-based companies are the primary developers of the application and operating system software that controls the hardware and implements the coding methods. These companies often export software code on master disks or as firmware on semiconductor memory chips, and they distribute upgrade software over the Internet and cable television networks.

The list of pioneering hardware inventions now implemented through software goes on and on. If this Court reverses the decision currently on appeal, it will create an exception for software code that will allow infringers to avoid paying appropriate damages by implementing their device in software and moving the final assembly step—installation of the software—overseas. That result is neither fair nor justifiable.

SUMMARY OF ARGUMENT

On its face, this would appear to be an appeal centered on the abstract statutory construction of two words: "component" and "supply." Appearances are deceiving. In reality, the interpretation argued by Microsoft and its amici would create an exception that favors the software industry over other industries, including traditional electronics hardware companies.

This case involves economic and technical issues at the heart of the new economy, particularly the convergence

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[3] Philips holds patents on codecs that are similar to the patents involved in the case currently on appeal.

of hardware and software devices. Over the past decade, software has become increasingly interchangeable with hardware, particularly in the field of consumer electronics.

Traditional electronics hardware companies have relied on Section 271(f) to protect their intellectual property for over 20 years. Software companies typically have also been proponents of strong patent protection—at least for software and business methods. Now that they compete directly with electronics hardware companies, however, these same software companies seek to avoid paying proper damages by creating an exception for software code from the protection of Section 271(f). If this Court rules in their favor, it will favor software companies over hardware companies in this emerging competitive landscape.

Microsoft and its amici raise two main arguments to try to convince this Court to exclude software code from the scope of Section 271(f). First, they argue that executable software code can never be a "component" of a patented invention, even though the software is an essential part of most electronic devices. Second, they argue that the software is not "supplied" from the United States, even though the executable code is created here in its final form, and then sent overseas with the intent that it be installed without modification onto the infringing products. Neither of these arguments has merit.

To argue that software is not a component under Section 271(f), Microsoft and its amici present this Court with a series of far-fetched hypothetical situations and bizarre "molecule" tests. These arguments blithely ignore how software is developed, used, and distributed in the real world.

At minimum, when software substitutes directly for, and has the same technical effect as, a piece of specialized hardware, it must be a component just as is the specialized hardware.

Like other software companies, Microsoft intended to supply the executable software code at issue in a standard, customary manner. Everyone with a "Windows" certificate of authenticity knows that the executable software code on that computer was supplied by Microsoft, regardless of how many secondary copies were made during installation and assembly.

Lost in the pages of arguments made by Microsoft and its amici is the real issue in this case: the proper measure of damages. Once a company supplies a software component to foreign installers in the same way that it supplies that component to U.S. installers, the proper measure of damages includes all the consequent foreign sales. It is irrelevant whether the company supplies the component on a golden master disk or over the Internet. When a software company supplies the executable code that is used to create multiple infringing devices, it should be held liable for all attendant damages flowing from that act. Thus, it should pay damages for each of the infringing devices sold abroad.

Contrary to the arguments of Microsoft and its amici, software companies do not face endless liability for infringing devices that are created abroad. Their liability is bounded by their own intent—when they send software abroad with the intent that it be installed on multiple infringing devices, they owe damages for all of those devices, no more, no less. Both patent law and copyright law already allow damages for foreign sales involving

multiterritorial acts of infringement. There is no reason to create an exception for Section 271(f).

Microsoft and its amici also argue that the entire U.S. software industry will move its research and development overseas if they have to pay damages for infringing foreign sales under Section 271(f). This scenario—positing a wholesale exodus based on liability under a single section of the infringement statute—is implausible at best. In fact, new economy software companies benefit from strong intellectual property protection and are not likely to move to countries with weaker intellectual property systems. The patentability of software has been a contentious issue in Europe, and it is hard to believe that U.S. software companies will move to countries where they might not be able patent their software at all, just to sell a product abroad that they cannot sell in the U.S. It is even less likely that they will move to countries with less-developed intellectual property regimes, such as China.

ARGUMENT

I. If This Court Exempts Executable Software Code From Section 271(f), It Would Improperly Favor Software Companies Over Electronics Companies In The Emerging Technology Landscape

The worlds of electronic hardware and software are colliding. Traditional electronics hardware companies, like Philips, have relied on Section 271(f) for over 20 years to provide proper protection of their intellectual property from other hardware companies. Over the past decade, however, competition in the electronics industry has shifted to include "new economy" companies, whose primary outputs are intangible, such as computer code, rather than physical goods. *See* William M. Landes & Richard A. Posner, *The Economic Structure of Intellectual Property Law* 390 (2003). The new economy includes companies like Microsoft, Intel, AOL, and Amazon.com. *Id.*

Now that new economy software companies compete directly with traditional electronics companies, they want this Court to carve out an exception from Section 271(f) for executable software code. If this Court does so, it will improperly favor software companies over hardware companies in the emerging technology landscape.

There are two major changes that have affected the electronics industry during the past decade and that make Section 271(f) so important to hardware companies. The first change is a well-recognized shift of high-volume electronics manufacturing from the United States to overseas contract facilities. Although the United States is no longer a competitive site for manufacturing this equipment, the U.S.

remains a primary locale for the development of technology and essential components that are exported overseas for assembly. Royalties on exports of patented technology are a significant reason why U.S. innovation continues to flourish and why the U.S. domestic research establishment remains competitive in the global marketplace.

The second change is perhaps not as visible as the first. In 1990, almost all consumer electronic devices were implemented in separate specialized sets as combinations of hardware circuit elements. For example, televisions, VCRs and telephone answering machines were produced and marketed in separate boxes and often via different selling channels. Today those same technical functions are usually implemented in software that is installed on a small number of common multiuse hardware platforms. Personal computers and PDAs use software to provide audio and video recorder functionality. Cellular telephones contain software functionality for cameras, music players and, soon, television players.

In this context, the boundary between hardware and software becomes fuzzy. Software and firmware code effectively reconfigures generic hardware circuits to perform technical functions that were formerly achieved in fixed circuitry. Hardware and software now "are practically interchangeable in the field of computer technology. On a functioning computer, software morphs into hardware and vice versa at the touch of a button. In other words, software converts its functioning code into hardware and vice versa." *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1339 (Fed. Cir. 2005) (internal citation omitted).

Failing to apply Section 271(f) to executable software or firmware code will allow infringers of patents on electronic devices to escape liability simply by implementing their design in executable software or firmware code and installing the code overseas.

In the past, if an electronics company manufactured specialized hardware components in the United States and shipped them overseas for combination with other components to create an infringing device, that company was clearly liable under Section 271(f). Today, a software company could take the same functionality and implement it through software or firmware code, put the executable code onto a golden master disk, and ship the code overseas to be installed onto hardware.

The end result is the same—overseas assembly of an infringing product from components made in the United States. Accordingly, the U.S. creator of an essential part of an invention, whether it is implemented in hardware or software, should be liable under Section 271(f) in both circumstances. If this Court decides otherwise, then Section 271(f) effectively will not apply to any industry where the line between hardware and software has blurred. There is no reason to create such an exception for software in Section 271(f).

II. Executable Software Code, A Key Component Of Most Electronic Devices, Is Supplied When It Is Furnished To A User In An Intended And Customary Manner

A. Executable Software Code Is As Much A Component of Electronic Devices As Hardware

Given the convergence of electronic hardware and software in the new economy, it would be ironic for the Court to artificially redraw a line that advances in technology have already erased. Section 271(f) does not limit "components" to machines or physical structures. Executable software or firmware code can be a component of a patented invention for purposes of Section 271(f). In fact, executable software code is such an essential part of modern electronic devices that it is the *primary* component of many products today.

This does not mean that every computer program is a component of a patented invention. But a program that has the same technical effect as an electronic hardware component surely is. In particular, there are two factors that illustrate that *executable* software or firmware code is in fact a component of a patented invention.

First, executable code is distributed in its final form such that it cannot be changed. The software developer designs the software in the form of source code, and then fixes it in an executable form by compiling it. The act of compiling manufactures the executable code. In order to modify the executable code, it must be decompiled, modified, then recompiled—a process similar to using a

sample to manufacture new copies of a gear. Although the software developer may allow the installer to customize certain parameters, the installer is *not* allowed to modify the executable code. For example, Microsoft requires original equipment manufacturers ("OEMs") to attach a Certificate of Authenticity to each fully assembled computer system.[4] This certificate assures customers that they have acquired "**genuine Microsoft Windows software**."[5] Thus, each consumer receives the same executable Windows software code that was compiled in the United States, regardless of where the computer hardware was manufactured or how many secondary copies were created along the way.

Second, executable code is what gives technical hardware its functionality. The hardware will not work without the software and the software will not work without the hardware. That is what makes each of them a *component* of a patented invention. Both components are necessary—the installation of the software component onto the hardware component is what creates the infringing device. Moreover, executable software code can substitute for, and have the same technical effect as, specialized hardware in an electronic device. Installing software or firmware onto hardware "creates a new machine, because a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to

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[4] *See* Microsoft OEM System Builder License ¶ 7, http://oem.microsoft.com/downloads/Public/sblicense/English_SB_License.pdf (last visited Jan. 22, 2007).

[5] Certificate of Authenticity, http://oem.microsoft.com/script/sites/public/certificate_of_authenticity.htm (last visited Jan. 22, 2007) (emphasis in original).

instructions from program software." *In re Alappat*, 33 F.3d 1526, 1545 (Fed. Cir. 1994). When executable software code provides the same technical effect as specialized hardware, the code is just as much a "component" of an infringing device as the specialized hardware itself was in the past.

This Court's *Grokster* decision further supports treating hardware and software interchangeably. Drawing extensively from patent law decisions involving hardware devices, this Court found copyright liability for distribution of a device "with the object of promoting its use to infringe copyright." *MGM Studios, Inc. v. Grokster, Ltd.*, 125 S. Ct. 2764, 2780 (2005). However, the "device" in *Grokster* was software, not hardware. *Id.* at 2782 ("the inducement theory of course requires evidence of actual infringement by recipients of the device, the software in this case").

In *Grokster*, this Court did not hesitate to apply traditional principles of patent law to a new mechanism for copyright infringement, even though it was implemented by software and not by hardware. If this Court will adopt principles of patent law and apply them to software in copyright cases, it should apply the same principles to software in an actual patent case.

Against the background of the convergence of hardware and software, Microsoft and its amici raise two main arguments in favor of creating an exclusion for software in Section 271(f): that executable software code is actually mere "design information" and that software must be fixed in a particular physical medium to be a component.

As discussed previously, the primary output of new economy software companies is intangible intellectual

property. This is what they protect with their own software patents. It is incorrect for Microsoft and its amici to continually refer to software code as mere "design information," similar to a mold, blueprint, or specification. The executable code of Windows, for example, is not just an abstract idea or design information, it is functioning software that actually operates the computer—that is why it is called the computer's *operating system*.

This is very different from the use of a mold or prototype of a physical component. Creation of a component based on a mold or specification requires the use of additional materials to create a replica of the component. The mold itself is nonfunctional—it is only used to guide the manufacture of actual functional components. In contrast, the golden master disk contains the *actual executable Microsoft Windows software code*, which Microsoft intends to have installed on each computer. The executable software code is *not* design information. It is not a recipe or set of instructions for assembling a computer, or a blueprint for building a hard drive, or the CAD/CAM specifications for building a machine. The executable code is itself a component that is combined with the hardware to create each infringing computer. Whether or not the golden master itself, or a duplicate of the golden master, or a stream of bits sent over the digital transmission wire is used to install the software, the executable software code is the same.

Similarly, the executable software code is a component irrespective of its packaging. Just as gears and chips are supplied in customary packaging when shipped to the customer, software is likewise packaged in various physical media. For example, the installation CD is just such

a package for transporting the executable software code—once the software code is installed, the disk is removed. A permanent physical union of an installation disk and a computer never occurs when installing software. Imagine a customer buys a copy of Microsoft Word at the local computer store. When the customer takes the disk home and installs the software, the disk itself does not become part of the computer; it is removed when the installation is complete and the software code has been transferred. No "molecules" from Microsoft's headquarters merge with the user's personal computer. *See* Amazon Brief at 3. Yet it is clear that the executable software code on the computer is the code that was written and compiled by Microsoft.

The same would be true if the user downloaded the software over the Internet and did not purchase a CD at all. The intellectual property created by new economy companies "may be shipped on a disk or other physical product," but that is not necessary, and "software is increasingly shipped to the purchaser over the Internet." Landes & Posner at 390. If the code were distributed over the Internet, that would obviously not turn the Internet into a "component" of the patented invention either.

B. A Software Component Is Supplied When It Is Furnished To A User In An Authorized And Customary Manner

Once it is clear that the executable software code can be a component of a patented invention, the proper inquiry is to determine whether the code was supplied to a user "in such manner as to actively induce the combination" of the executable software code with other components outside of

the United States "in a manner that would infringe the patent if such combination occurred within the United States." 35 U.S.C. § 271(f)(1) (2007).

Whether a component is "supplied" must be viewed in context. The properties of a component may dictate how it is supplied to customers. For example, liquid components may be supplied in containers, or perhaps through pipelines. In each case, the most relevant inquiry is to look at the customary methods by which a seller furnishes a component to a buyer in that industry.

In the new economy, intangible intellectual property products, such as executable software code, are often furnished by providing one physical copy of the product (or an Internet download) along with a license to install that product on more than one machine. The number of products "supplied" is the number of products authorized or licensed for installation. A software *license*, not possession of a physical disk, is what gives a user the right to run a program or transfer it to others.[6] For example, a company with five or more employees can purchase software from Microsoft under a Volume License Agreement. The general license terms for Microsoft Windows XP Professional allow the company to "store one copy of the software" on a network server and

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[6] *See* How to Buy Overview, http://www.microsoft.com/licensing/options.mspx (last visited Jan. 22, 2007).

"*use that copy to install the software on any other device to which a license has been assigned.*"[7]

If a software company furnishes a business with *one* software CD and permission to install that software on *five hundred* computers via the network, that software company has supplied its customer with executable software code for five hundred computers, not one. In fact, the software has been supplied in the most efficient, customary way. Neither party wants the software company to supply the executable code on five hundred separate CDs. As Microsoft points out, "*authorized* copying is inherent in the distribution of software." Microsoft Br. at 17. As a copyright holder, Microsoft has the exclusive right to prevent copying. *Id.* at 19 n.4. But when Microsoft *furnishes* the executable software code, *intends* for it to be copied, *allows* it to be copied, and gets *paid* for the copies, then Microsoft *supplied* those copies of the executable software code.

Furthermore, the number of physical disks and secondary copies involved in the installations is irrelevant to the users of the software. Does anyone who buys a computer with an official "Microsoft Windows" certificate of authenticity have *any* doubt that Microsoft supplied the executable software code? Microsoft's instructions to OEMs on how to install Windows illustrate that a physical disk is not necessary, or even desired, for the installation of the Windows operating system. Microsoft describes four

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[7] Microsoft Desktop Operating Systems, Section A(II)(a), http://www.microsoftvolumelicensing.com/userights/ProductPage.aspx?pid=91 (click hyperlink which states "Standard Terms for Windows XP Professional, when licensed in a Microsoft Desktop Operating Systems model") (last visited Jan. 22, 2007) (emphasis added).

different ways OEMs can preinstall Windows onto personal computers. Microsoft, *Preinstalling Microsoft Windows XP Professional by Using the OEM Preinstallation Kit, Part I*, 2003, at 3. The recommended way is to fully install the software on one computer and then take an "image" of that first computer and install the image onto all of the other computers over the network. *Id.* According to Microsoft, this method is "faster and less cumbersome than the other models." *Id.* In fact, using the CD to manually install the software is the lowest-rated option because it is "slow and inefficient." *Id.* at 5 & 7.

Thus, new economy software companies like Microsoft rely on the fact that software can be supplied in many different ways, most of which are more efficient than manually using a separate CD for each computer. As the panel majority pointed out in the decision currently on appeal, "Microsoft has taken full advantage of the replicable nature of software to efficiently distribute Windows™ internationally. At the same time, however, Microsoft posits that § 271(f) liability should attach only to *each disk* that is shipped and incorporated into a foreign-assembled computer." *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1370 (Fed. Cir. 2005) (emphasis added). But the customary ways in which software is supplied do *not* require a separate disk for each installation—the executable software or firmware code for many machines can be furnished on one physical medium, such as a CD, or on none at all.

If Microsoft did provide OEMs with multiple operating system CDs and the OEMs installed each CD manually, then there is no doubt that Section 271(f) would apply. Microsoft conceded that fact in the district court.

AT&T Corp. v. Microsoft Corp., No. 01 Civ. 4872 (WHP), 2004 WL 406640, at *7 n.7 (S.D.N.Y. Mar. 5, 2004). The result should be the same if Microsoft provides the executable software component on one golden master CD and *authorizes, licenses, and instructs* the OEMs to install it on multiple computers. Whether liability attaches under Section 271(f) should not depend on which installation method the OEM chooses.

III. Liability For A Single Act In The United States Properly Encompasses All Consequential Damages, Including Foreign Sales

Lost in the pages of argument over convoluted interpretations of liability is the real issue: the proper measure of damages. Once a company supplies software components to foreign manufacturers in the same way that it supplies them to U.S. manufacturers, proper damages include foreign sales.

When a software company supplies executable software code components—even with a single act of sending a golden master disk or digital transmission—it should be held liable for all attendant damages. Software companies like Microsoft supply golden master disks with the knowledge and intent that the executable software code on those disks will be installed onto multiple hardware devices and sold overseas. Thus, those companies should pay damages for every infringing device that would not have been sold abroad but for their acts of supplying.

Microsoft and its amici contend that they will face endless liability if this Court does not create an exception for software in Section 271(f). But software companies do *not* face endless liability for the software components they have supplied—they only face liability for the number of copies they intend to be installed. This is the same liability they would face if the installation had occurred within the United States. For example, if Microsoft is liable for "tens of millions of foreign-produced" copies of Windows (Microsoft Br. at 24), that is only because it authorized and licensed the foreign OEMs to install Windows on tens of millions of computers, for which Microsoft will receive royalty payments.[8]

This outcome reflects the realities of software distribution in the real world. Even if a software company only sends one golden master CD abroad, foreign OEMs do not pay for only one copy of the software, as would a regular consumer purchasing a single copy of a software product. The OEMs pay for the executable software code to install on thousands of infringing devices. Thus, the appropriate measure of damages is not just for a single sale of one copy of the software. If a software company like Microsoft gets paid for each and every infringing computer that is created from that one golden master disk, it must also pay the consequential damages that flow from supplying that disk.

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[8] In fact, as discussed *infra* in Section IV, if a new economy software company tactically encourages pirated copies of its software to be created and distributed so that it can establish or maintain a network monopoly, it can be liable for those copies as well. Even in that case, however, the company's liability is still limited by its intent.

Both patent law and copyright law already allow a plaintiff to collect damages for all of the consequences that flow from an infringer's actions, including foreign sales. Patent law allows a plaintiff to collect damages for foreign sales when infringing devices are made in the United States and sold abroad. *See Datascope Corp. v. SMEC, Inc.*, 879 F.2d 820, 827 (Fed. Cir. 1989); *Schneider AG v. SciMed Life Sys. Inc.*, No. 94-1317, 1995 U.S. App. LEXIS 9754, at *9 (Fed. Cir. Apr. 26, 1995) (nonprecedential opinion). Copyright holders can also collect damages for foreign copies when the master copy was created in the United States. *See Update Art, Inc. v. Modiin Publ'g, Ltd.*, 843 F.2d 67 (2d Cir. 1988); *Sheldon v. Metro-Goldwyn Pictures Corp.*, 106 F.2d 45, 52 (2d Cir. 1939).

Microsoft and its amici argue that applying the proper measure of damages would extend the extraterritorial reach of U.S. patent laws because the damages must be calculated by looking at the number of sales made abroad. *See, e.g.*, Br. of Intellectual Property Professors at 6-7. But "[a] claim is not 'extraterritorial' simply because it involves foreign acts or parties" and courts "may be too quick to perceive 'extra'-territoriality in claims that in fact allege multiterritorial infringements [that] involve acts or parties located in more than one country." Jane C. Ginsburg, *Extraterritoriality and Multiterritoriality in Copyright Infringement*, 37 Va. J. Int'l L. 587, 588 (1997).

The executable software code is developed in the United States and sent overseas for installation with authorization from the United States software company. Requiring the infringer to pay damages for such a

multiterritorial act, which has its origin in the United States, does not extend the extraterritorial reach of U.S. patent law.

Microsoft and its amici also argue that the entire software industry will move its research and development facilities overseas if they have to pay damages on foreign sales under Section 271(f). This scenario is implausible at best.

Because their primary output is intellectual property, new economy software companies benefit from strong intellectual property protection and are not likely to move to countries with weaker protection just to avoid application of Section 271(f). The patentability of software has been a contentious issue in Europe. It is very hard to believe that a U.S. software company would move to a country where it might not be able to patent its products at all, just to avoid one section of the U.S. patent law. It is even less likely that software companies will move to countries with less-developed intellectual property regimes, such as China.

New economy software companies could achieve cost savings by moving their development and production facilities overseas, but they have chosen to remain in the United States and have flourished here, in no small part because the copyright, trade secret, and judicial processes in the United States provide strong and effective protection for the intellectual property content of software products. There is no justification for letting such companies enjoy the benefits of our strong intellectual property system for their own products while, at the same time, allowing them to avoid paying damages for infringing other companies' patents when those same products are exported.

IV. Software Companies Advocate Weak Protection Overseas Because Software Piracy In Developing Countries May Be Beneficial In The New Economy

Given the important role that patents play in encouraging innovation, it may seem surprising that software companies are arguing for *less* patent protection for software. Why would companies with numerous software patents argue for an exemption that would also result in less patent protection in countries with weaker intellectual property rights? The answer lies in the economic nature of new economy software markets, particularly the monopolies that exist in these markets.

Software markets exhibit a unique combination of economic factors. First, intellectual property is characterized by high fixed costs relative to marginal costs; for computer software the marginal cost approaches zero. Richard A. Posner, *Antitrust in the New Economy*, 68 Antitrust L.J. 925, 926-27 (2001). In fact, the marginal cost can actually be negative. Richard A. Posner, *The Law & Economics of Intellectual Property*, 131:2 Daedalus 5 (2002) ("Indeed, widespread use of intellectual property can actually increase the value of the property; in effect, additional copies have negative cost, when the value they confer is taken into account.").

Second, many computer software products, particularly operating systems and design products like AutoCAD, are characterized by network effects. Network effects occur in markets where the larger the firm's output,

the more valuable that output is to its customers. Posner, *Antitrust in the New Economy*, at 928. Computer software products become more valuable as more people use them, because of training, support, and standardization of equipment and procedures. *Id.*

Third, intellectual property is a public good. A public good is something that one person can use without reducing the value of the product to other users. Richard A. Posner, *Do We Have Too Many Intellectual Property Rights?*, 9 Marq. Intell. Prop. L. Rev. 173, 178-79 (2005). Thus, "piracy" of intellectual property is not really like theft of physical property. *Id.* If someone makes a pirated copy of the Windows operating system, for example, the program is still there for Microsoft to sell to others. *Id.* at 179. If the software pirate could not have afforded to purchase the software, then Microsoft has not actually lost any sales. *Id.* In fact, if only a few of the people who copy an operating system would have bought it, Microsoft benefits from the piracy because the more people who use the operating system, the more people who need applications for it. *Id.*

The interplay of these economic factors explains why software companies like Microsoft are willing to tolerate, or perhaps even encourage, software piracy. As Landes & Posner point out, "[e]ven pirating of software, about which the software industry complains so loudly, is not all loss to software producers." Landes & Posner, *supra*, at 46.

In other words, the existence of pirated software increases demand for complementary products. *Id.* For example, the proliferation of pirated copies of Windows may benefit Microsoft and other software companies who write

applications that run on the Windows platform. In addition, "[b]y accelerating the spread of the work" to more users "piracy may help the creator of the work to obtain a network monopoly." *Id.* Software piracy can actually *help* the producer of the pirated software by increasing the network externalities of the dominant firm. *Id.* at 393.

Since Microsoft and its amici do not need the protection of Section 271(f), they would like this Court to create an exception for the entire software industry. If this Court does so, it will improperly favor new economy software companies over traditional electronics companies who rely on the protection of Section 271(f) to recoup their research and development costs.

CONCLUSION

The judgment below should be affirmed.

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IN THE
Supreme Court of The United States

MICROSOFT CORPORATION,
PETITIONER,
v.

CORRECTED COPY

AT&T CORP.,
RESPONDENT.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* WISCONSIN ALUMNI RESEARCH FOUNDATION, RESEARCH CORPORATION TECHNOLOGIES, INC., AND THE REGENTS OF THE UNIVERSITY OF CALIFORNIA SUPPORTING RESPONDENT

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INTEREST OF THE *AMICI CURIAE*[1]

Amici are universities and an independent technology management company whose research and development investments provide technological advances in many fields, including computer science, biology, chemistry, and engineering. Research and development in each of these fields is endangered by the worldwide piracy of valid intellectual property. While much of the piracy is practically, if not legally, difficult to prevent, establishing legal precedent based on Petitioner's arguments would give license for infringers to circumvent U.S. patent rights worldwide.

The academic sector drives research and innovation in this country. In 2004, academic institutions spent $42 billion on research and development of which 54% was spent on basic research—the lifeblood of technological advancement. In 2003, the federal government supplied 62% of the funds for academic research and development expenditures while the institutions themselves contributed 19% of the funds. Industry supplied less than 7% of such funds.[2]

Innovation, defined from the university perspective as the translation of basic-research results to products or processes in the marketplace, is made possible through, and has been dramatically improved by, the Patent and Trademark Law Amendments of 1980, 35 U.S.C. §§ 200-212, commonly known as the Bayh-Dole Act, and its implementing regulations, 37 C.F.R. § 401. Congress passed the Act in 1980 to spur research in the academic sector and

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[1] The parties filed letters of consent to the filing of *amicus* briefs in support of either party with the Court on November 30, 2006, pursuant to Rule 37.3. Pursuant to Rule 37.6, *Amici* state that no person or entity other than *Amici* or their counsel authored this brief in whole or in part or made a monetary contribution to its preparation or submission.

[2] For the figures in this paragraph, *see* National Science Foundation, *Science and Engineering Indicators 2006*, available at http://www.nsf.gov/statistics/seind06/c5/c5h.htm.

promote university-industry collaborative relationships that ensure that the fruits of university research reach and benefit the public.

Before this Act, government agencies kept title to inventions that had been funded with federal money. Consequently, few invention disclosures were made to universities. Without the Bayh-Dole Act and the patent protections that it provides, much of the academic sector's research and development would languish because private companies would be reluctant to invest in the development of products, fearing that others would free-ride and receive the benefits of the invention without having made the investment in it.

Amicus Wisconsin Alumni Research Foundation (WARF) was founded in 1925 as a nonprofit entity to promote, encourage, and aid scientific investigation at the University of Wisconsin-Madison. One of WARF's first accomplishments was to patent a vitamin D discovery that eventually eliminated the childhood disease rickets worldwide. Since its founding, WARF has processed approximately 4,800 inventions created by UW-Madison faculty and staff, obtained 1,540 U.S. patents on these inventions, entered into over 1,390 license agreements with companies around the globe, and returned $800 million in licensing-fee income to UW-Madison to fund research programs and initiatives.

The Bayh-Dole Act has made it possible for WARF to make the contributions to the public good that it does today. In the middle to late 1960s, government agencies kept title to inventions that had been funded with federal money. As a consequence, invention disclosures to WARF—inventors' write-ups for patent counsel to use in preparing patent applications—had fallen to barely one per month and what few disclosures there were had fallen in quality. The

situation improved somewhat when Institutional Patent Agreements (IPAs) were negotiated with (what is now) the Department of Health and Human Services in 1968 and the National Science Foundation in 1973. These IPAs gave WARF (and other universities) the right to elect to take title to inventions made with funds from those two agencies.[3]

Since the enactment of Bayh-Dole, invention disclosures to WARF have mushroomed. Today, WARF (a) manages over 720 pending and 880 issued U.S. patents on UW-Madison technologies, as well as 1,920 foreign equivalents; (b) offers more than 3,800 technologies for licensing; (c) maintains more than 940 active commercial license agreements, as well as 460 academic licenses; (d) has over 160 license agreements with Wisconsin companies; and (e) holds equity in 40 UW-Madison spin-off companies. WARF's most important patents include the blood anticoagulant Warfarin, a coating process making pills easier to swallow, treatments for osteoporosis and cancer, magnetic resonance techniques, and a discovery known as the "Wisconsin Solution" that prolongs the use of transplant organs.

Amicus Research Corporation Technologies, Inc. is an independent technology management company that has been involved in providing commercialization services to academia and other institutions since its founding in 1912. It has been pivotal to the success of many important pharmaceuticals, diagnostics, biotechnology products, and new materials and processes. Recent products include three in the cancer area: the widely used therapeutic compounds Cisplatin and Carboplatin, and the PSA (Prostate Specific Antigen) test for diagnosing and monitoring prostate cancer.

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[3] The IPAs were evolutionary steps that led to the Bayh-Dole Act which largely codified IPA provisions.

Amicus Regents of the University of California is a party in *Eolas Techs. Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005), a case relied upon in part by the Federal Circuit in the present case. But its interests are broader. It provides for technology transfer to commercial markets from ten campuses and five medical schools in the State, from two national laboratories directly operated by the University of California system, and one national laboratory operated as a joint venture with the University as a partner—all three on behalf of the U.S. Department of Energy. Currently, there are more than 3,000 ongoing research projects supervised by 13,000 principal investigators.

In the last ten years alone, these efforts have resulted in three Nobel prizes and a distinguished list of innovative research discoveries in biochemistry, bioengineering, cell biology, disease procedures, developmental biology, endocrinology, genetics, immunology, neurobiology, oral biology, pharmacy, and pharmacology. But the one area of technology that permeates all other areas of research is computer science. For instance, scientists from the University of California provide software tools for analyzing genomics and proteomics data and apply such tools in other areas of computer science.

Yet the advances in software engineering that often start out at research institutions reach far beyond the walls of academic labs. Today, individuals use software in their daily lives regardless of their profession: "surfing," shopping, trading, and researching on the Internet; making calls and keeping their calendars on cell phones; and catching moments on digital cameras are just some of the ways advances in software technologies have become integrated in our society's fabric.

But concern for this "innovative ecosystem," in which information technology has fueled growth and innovation in

nearly every facet of our economy and society, is growing in light of economic growth in China and India.[4] In order to remain competitive with the research and development that is burgeoning abroad, universities rely heavily on the protections of the United States' patent system. It is those protections that enable universities to commercialize their research so that it reaches the public and does not languish unused behind academic walls. Further, those protections allow universities and small businesses, either under the auspices of the Bayh-Dole Act or otherwise, to position themselves for competition not only in the United States, but in a global economy, imparting a measure of protection for the job base in the United States.

Under Petitioner's reading of 35 U.S.C. § 271(f), however, the academic sector's ability to commercialize its ideas and innovations for the public benefit is jeopardized. If Petitioner's theory prevails, an infringer may take a software component of a patented invention abroad and supply infringing units abroad unfettered by the statutes set up to prevent exactly that.

The result for research universities—and any entity that invests in these types of inventions—is that their investment in such technology will be radically devalued with one release of the component that is later taken (or just electronically transmitted) abroad. Moreover, that export would be tantamount to subsidizing foreign manufacturers and foreign competition. If this Court condones the ability of infringers to circumvent a United States patent by distributing a self-supplying component abroad, much of the black-market piracy that already deprives universities and

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[4] *See* The National Academies, Computer Science and Telecommunications Board Projects: *Assessing the Impacts of Changes in the Information Technology Research and Development Ecosystem*, available at http://www7.nationalacademies.org/cstb/project_ecosystem.html.

corporations of valued R&D returns will be legitimized. This will deter commercial investment and stifle innovation on these types of technology, defeating the objective of the Bayh-Dole Act.

Amici submit this brief to provide the Court with an academic-sector perspective on the effects of Petitioner's position—which would effectively exempt patented software inventions from Section 271(f) by giving that section an unnatural reading. This brief focuses on why the Federal Circuit correctly applied the plain language of the statute to the specific facts before it and on why Petitioner's interpretation would give license to worldwide foreign piracy of certain patented technology.

SUMMARY OF ARGUMENT

The software at issue in the present case fits squarely within the plain language of Section 271(f), as the software is a "component" that is "supplied from" the United States and "combin[ed]" with the hardware abroad to form the "patented invention." First, software can be a component of a patented invention—the Government, Judge Rader, and even Microsoft agree on this point. Second, the software component is the program content (the object code that is the set of instructions or operational procedures that are the program). And that content is unquestionably "supplied from" the United States. Third, Microsoft's and the Government's concessions demonstrate that, even if this Court were to construe the "component" as the physical embodiment of that software (the structure that the software renders on a computer's memory), rather than the content, that software is still "supplied from" the United States.

Microsoft's core submission—that foreign copies of its Windows software (made from either a golden master shipped from the United States or an electronic transmission

sent from the United States) cannot be "supplied from the United States"—is wrong. It ignores the natural understanding of what a software component (to be combined with hardware) is—namely, the content of the code that is combined with computer memory when it is loaded onto a computer, as the United States tacitly recognizes. U.S. Br. 25 n.2. And it contradicts Microsoft's crucial admission—namely, that it "*supplies* its Windows operating system object code *from the United States* . . . by sending . . . a single encrypted transmission of the object code." J.A. 31 ¶7 (emphases added). With encrypted transmissions, the end result is another copy of that code rendered in a foreign country, yet Microsoft concedes that that copy is a "component" that was "supplied from the United States." *Id.*; Pet. Br. 34, 35. That concession, along with others (by Microsoft and the United States), destroys the premises of the effort to avoid Section 271(f)'s natural application to the software here.

ARGUMENT

I. It Is Undisputed That Software Can Be A Component And Is Combined With Hardware To Create A Patented Invention Consisting Of A Computer That Performs Certain Functions Enabled By That Software.

There is no dispute that software can be a "component" that is "combin[ed]" with hardware to create a patented invention covered by Section 271(f). Even the Government and Judge Rader agree with Respondent on this point. U.S. Br. 10-16; *AT&T Corp. v. Microsoft Corp.*, 414 F.3d 1366, 1372 (Fed. Cir. 2005) (Rader, J., dissenting). Indeed, the United States agrees with Respondent that "physically placing an actual, machine-readable copy of the Windows object code in a computer to complete the patented system does combine that software copy with the other

components so as to make the patented invention." U.S. Br. 15-16.

And even Microsoft concedes this point. It states that it "agrees with the United States that the computer-readable and -executable 'software copy that is actually loaded onto [a] computer[]' may be a 'component of a patented invention' under Section 271(f)." Pet. Br. 37 (quoting U.S. Cert. Br. 8). Likewise, Microsoft "agrees with the United States (U.S. Cert. Br. 8) that physical media containing the machine-readable object code, combined with a general purpose computer to perform the functions of a special purpose speech coding device, could constitute a component of AT&T's Digital Speech Coder invention." Pet. Br. 34 n.9.

Microsoft attempts to escape these concessions by mistakenly treating the software here as "no different from the design information one may glean from blueprints, recipes, computer program listings, and patents." *Id.* at 38-39. That is wrong. As a matter of ordinary usage, a blueprint for construction is not a "component" of the item created by carrying out the blueprint's instructions. Nor is a blueprint "combin[ed]" with anything to render a patented invention. Software, on the other hand, is both considered a "component" and is "combined" with the computer or other medium, and for good reason.

The computer-readable program code (the software on Microsoft's golden master) is *not a set of instructions to people* on how to build the patented invention; rather, when *combined* with the hardware component, the code *remains on* the computer on which it is installed as "instructions" (using Microsoft's locution) for that hardware to continue using. The computer continues to "use" the software it contains, making the computer usable in a way that is "new and useful." *See In re Bernhart*, 417 F.2d 1395, 1400 (C.C.P.A. 1969); *see also In re Alappat*, 33 F.3d 1526, 1541-42 (Fed.

Cir. 1994). And the software can be separated, removed, or *uncombined* from the other component of the invention—the hardware—without destroying the latter.

"Design instructions," in Microsoft's generic sense of instructions to people on how to build the infringing product, are very different. Most importantly, they are not "combin[ed]" with any other component to create an infringing product. The design instructions to people on how to make a product do not remain with the product after it is fabricated; the "design instructions" are exhausted vis-à-vis that product once the product is made. A recipe is exhausted vis-à-vis the dish it tells the cook how to make; the recipe is not a component (ingredient) of the resulting dish for eaters to use. Software, on the other hand, when physically embodied on hardware after being installed, remains *combined* on the hardware in order to be read and used in the use of that hardware and can be separated from that hardware by uninstalling the software.

There are potentially two different ways that a software component can be described: it could be the *content* (the object code that is the instructions or operational procedures that are the program) or, more narrowly, the physical embodiment of that content in the molecules of the computer memory. Either way, Microsoft's argument fails. As the next section of this brief explains, the software-as-content understanding of the "component" being "combin[ed]" is the natural meaning of the terms of Section 271(f)—which defeats Microsoft's argument, because there is no dispute that the software (as content) here was supplied from the United States. But, as Section III *infra* explains, even if this Court adopts the narrower alternative of software-as-physical-embodiment-of-the-content that Microsoft and the United States urge, the result under Section 271(f) is still the same because that component was

"supplied from" the United States, as Microsoft's and the Government's concessions establish.

II. The Software Component Of A Programmed-Computer Invention Is The Intangible Content (The Set Of Instructions Or Operational Procedures) That Is Combined With The Computer To Form The Infringing Product.

The natural understanding of the software component of a programmed computer invention is the content of the program that is combined with the hardware by loading the code onto the computer's memory.

That understanding is implicit, first of all, in Microsoft's own Question Presented, which asks whether the "*intangible* sequence of '1's' and '0's'" is a component. Pet. for Cert. i (emphasis added). The references to "intangible" and also to 1s and 0s (which are not physical entities) necessarily recognize that it is the content—the "object code" represented as the sequence of 1s or 0s—that is the software at issue.

The software-as-content understanding is also implicit in the crucial concession that the United States makes in an effort to reconcile its position before this Court with the natural understanding as to software in computers: "[i]f petitioner sent copies of its Windows software from the United States to a foreign country and those copies *were loaded* onto computers, petitioner would likely be liable under Section 271(f) for each such infringing copy." U.S. Br. 25 n.2 (emphasis added). That statement necessarily admits that a "combination" occurs between the software and the computer hardware by loading the software onto the computer—otherwise, there could not be the liability that the Government acknowledges.

A "combination" of components, however, cannot occur unless the "components" being combined already exist. With software, it is the *content* of the software that pre-exists the loading process, not the physical embodiment of that content first created *by* the installation. Loading of software onto a computer, moreover, refers to making a *new* copy on the computer (*e.g.*, in the random access memory), not physically inserting a copy from outside the computer into the computer for the computer to use *that* copy—as Microsoft itself acknowledges. Pet. Br. 4 n.2 (installation inherently involves transferring content to make a new copy). It is thus the content of the software that is being combined with the memory or storage medium of the computer. Thus, the logical conclusion of the Government's admission is that it is the software's content that constitutes the "component," and not the physical embodiment that exists after the installation process.

Furthermore, nothing in the ordinary meaning of "component" limits the term to machines or physical structures. WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 466 (3d ed. 1986); THE AMERICAN HERITAGE DICTIONARY 387 (3d ed. 1992). And with respect to computer software particularly, it is ordinary usage of patentees, courts, and the PTO to describe software as a "component" of the computers of which it is a part. *See, e.g.*, *Netword, LLC v. Centraal Corp.*, 242 F.3d 1347, 1351 (Fed. Cir. 2001) (patent claim describes "computers" and their "software components"); *Response of Carolina, Inc. v. Leasco Response, Inc.*, 537 F.2d 1307, 1326 (5th Cir. 1976) ("The final component of the computer system is the application software."); U.S. Patent No. 6,629,151 (filed Dec. 8, 1999) (col. 17, l. 66-col. 18, l. 1) (Microsoft's patent claiming a "wireless network hardware component connected to a computer and a software component on the computer"); PTO, Manual of Patent Examining Procedure § 2106.01 at

2100-24 (8th ed. 3d rev. 2005) [hereinafter MPEP] (discussing elements "at least partially comprised of a computer software component"); MPEP § 2106.02 at 2100-25 (discussing "systems which include a computer as well as other hardware and/or software components"); *see also* MPEP § 2106 at 2100-13 ("a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized").

Thus, when the software on Microsoft's golden master and encrypted transmissions is installed on hardware abroad, a "combination" of "components" occurs within the meaning of Section 271(f). *See* MPEP § 2106 at 2100-14 (a "hardware and software combination . . . defines the statutory product.") (citations omitted). The term "combine" requires no physical joining of tangible components. THE AMERICAN HERITAGE DICTIONARY 377; WEBSTER'S THIRD NEW INTERNATIONAL DICTIONARY 452.

And as the Government explains, a "'component' is a constituent part; element; or ingredient of an invention that is combined with the other parts, elements, or ingredients to form the completed invention." U.S. Br. 11. In the present case, it is the patented software's ability to digitally record speech that is the essence of the present invention—not the physical shape that the molecules happen to take once the code is installed on the computer-usable medium. For instance, if the physical embodiment of the code were altered in such a way that the claims of the patent were still met, it would still constitute the patented invention. Thus, the most common-sense reading of the term "component" refers to the content (the instructions of the software), not its physical embodiment or shape once installed.

The content, furthermore, is indisputably "combin[ed]" with the hardware component "outside the United States in a manner that would infringe the patent if such combination occurred within the United States." And, as Section 271(f) requires, Microsoft *intends* that its domestic work—the content of the software code—be combined into the final infringing products. *See* 35 U.S.C. § 271(f)(1) ("[I]n such a manner as to actively induce the combination of such components."); 35 U.S.C. § 271(f)(2) ("[I]ntending that such component will be combined.").[5] In shipping the golden master and electronically transmitting its Windows code abroad precisely in order to have its Original Equipment Manufacturers (OEMs) install the software they contain on multiple computers and hardware, Microsoft is doing just what Section 271(f) was intended to cover.

III. Even If The Software Component Of The Programmed Computer Is Viewed As The Physical Embodiment Of The Content (The Arrangement Of Molecules In The Computer Memory), That "Component" Is "Supplied From" The United States Because Nothing But Copying Of U.S.-Made Code Is Involved In The Installation.

A. Even if the Court accepts Microsoft's and the Government's narrow software-as-physical-embodiment view of the software "component," their argument for escaping Section 271(f) collapses. The argument is conclusively refuted by the concessions they rightly make in an effort to try to reconcile their position with the common-

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[5] For this reason, fears of "open-ended liability" (U.S. Br. 29) are overstated. Microsoft would only be held liable for those copies it *intends* to have made—the copies from which it receives licensing royalties. Thus, Microsoft's liability is limited as it is directly tied to Microsoft's ability to profit from the infringing product.

sense usage that software is combined with memory to become a component of the operational computer.

The position of Microsoft and the Government—that a component can only be supplied from a country in which the molecules have been physically present—is disproved by Microsoft's and the Government's own admissions. Microsoft admits that it "*supplies* its Windows operating system object code *from the United States* to certain foreign OEMs and authorized foreign replicators by sending to foreign OEMs or replicators a single *encrytpted transmission* of the object code." J.A. 31 ¶ 7 (emphases added). But the encrypted transmission, transmitted electronically to a computer abroad, results in another copy of the code on that foreign computer—a copy that was never physically present in the United States. And yet Microsoft agrees that that code was supplied "from the United States." *Id.* Indeed, it has further conceded that "*other than* the 'golden master disks' and *the encrypted transmissions of Windows object code*, Microsoft does not supply any '*component*' from the United States for assembly abroad." J.A. 32 ¶ 10 (emphases added); *see* Pet. Br. 34. That concession acknowledges that the object code created by the electronics at the receiving end of the transmission is actually a "component" of the invention at issue, a computer programmed with that object code.

Similarly, the United States concedes that "[i]f petitioner sent copies of its Windows software from the United States to a foreign country and those copies *were loaded* onto computers, petitioner would likely be liable under Section 271(f) for each such infringing copy." U.S. Br. 25 n.2 (emphasis added). But loading or installing software, as Microsoft concedes, inherently involves making a new copy. Pet. Br. 4 n.2. Yet the Government concedes that an infringing party doing so would "likely be liable under Section 271(f) for each such infringing copy." U.S. Br. 25.

Because there is no relevant difference between electronically transmitting the computer code from the United States (which entails a copy arriving electronically abroad) and installing that code from a golden master (which also results in a copy), these concessions destroy Microsoft's and the Government's premise.

B. All parties agree that when used as a verb, the word "supply" is defined as "to furnish or provide." RANDOM HOUSE UNABRIDGED DICTIONARY 1912 (2d ed. 1993); *see also* Pet. Br. 14. Neither of these definitions limits the method by which the act of supplying must occur. Indeed, both of these definitions can be used to describe Microsoft's distribution of its Windows code via a golden master.

Microsoft's critical admission again defeats its argument: it "*supplies* its Windows operating system object code *from the United States* to certain foreign OEMs and authorized foreign replicators *by sending* to foreign OEMs or replicators a single encrytpted transmission of the object code." J.A. 31 ¶ 7 (emphases added). Microsoft did not just stipulate that it supplies the *encrypted transmission* from the United States. Rather, it supplies the *Windows code* from the United States and its method of supplying that code from the United States is *by sending* the encrypted transmission. *Id.*

Furthermore, and contrary to Petitioner and its *amici*'s contention that "petitioner is subjected to open-ended liability in the United States 'for products *manufactured entirely abroad*,'" (U.S. Br. 29 (quoting Rader, J., dissent at Pet. App. 11a) (emphasis added)), all that is accomplished abroad is the installation of the patented software. Microsoft admits that it "conceives, writes, compiles, tests, debugs and creates" that software in Redmond, Washington. J.A. 31 ¶ 4; Pet. App. 46a ¶ 4. The software was sent abroad for nothing

more than the final step of assembly: installation on a computer or other medium. And Microsoft agrees that "Section 271(f) applies in the situation where 'everything was accomplished in this country except putting the pieces together as directed.'" Pet. Br. 39 (quoting *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 533 (1972) (Blackmun, J., dissenting)). The installation process, which even Microsoft concedes inherently involves an act of duplication (Pet. Br. 4 n.2), is how the pieces of binary software and computer hardware are put together as directed. And that is the only step that is completed abroad.

The plain meaning of the term "supply"—showing that it is not limited as Microsoft and the Government suggest—is further supported by this Court's holding in *Sony Corp. of Am. v. Universal City Studios, Inc.*, 464 U.S. 417 (1984), inappropriately relied upon by Microsoft. Pet. Br. 15. *Sony* recognizes that, when a consumer uses a Sony-sold video-recording machine to record an off-the-air movie or television program, the *content providers* (in that case respondents Universal Studios and Walt Disney Productions), not the hardware providers (in that case petitioners Sony Corp. and Sony Corporation of America), are "supplying" the program (the "work") to the consumer by allowing television networks to broadcast their programs. *Sony*, 464 U.S. at 436 ("Petitioners in the instant case do not supply Betamax consumers with respondents' works; respondents do.") The Court in *Sony* used perfectly commonplace usage. Under that usage, the content providers supplied the millions of copies received by consumers even though the individual copies were never in the content providers' hands, and moreover, they may have had just *one* copy in initiating the transmission. That is the ordinary use of the word "supply" in the context of content being copied, and it covers this case.

The meaning, indeed, is even clearer under Section 271(f) because "supply" does not stand alone in the

provision: the phrase is "supplied *from*." The phrase refers, not to where the copy on the computer is created, but to where it comes *from*—to its origin at a prior stage. Where the copy is nothing but the result of installing content, the place where the finally-formed content is sent out for nothing more than installing on a medium is where it is supplied from.[6]

Yet, without any support for its argument, Microsoft insists that the term "supplied" requires absolute congruity between what is initially transmitted and what is ultimately acquired through that transmission. In his dissent, Judge Rader similarly argued that "[a]s a matter of logic, one cannot supply one hundred components of a patented invention without first making one hundred copies of the component, regardless of whether the components supplied are physical parts or intangible software." *AT&T Corp.*, 414 F.3d at 1373. But these contentions miss the mark. They ignore the word "from" that follows "supplied"; they disregard Microsoft's concessions about the electronic transmission and supplying the code by sending the golden master; they disregard the Government's concession about individual copies; and they violate the usage of even "supply" alone as reflected in *Sony*.

C. Not only does logic undermine Microsoft's contention, Microsoft itself undermines it own contention. If Microsoft places one copy of Windows on a server in the United States and invites anyone around the world to download it, it is "supplying" that software worldwide, regardless of the fact that it started out with just one copy.

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[6] With only routine and perfect almost-instantaneous copying involved in installation, any blame (or credit) for any bad (or good) quality of the component in the final patented invention squarely resides with the Microsoft employees in the United States who completed the code sent out (by golden-master shipping or electronic transmission) for installation.

Likewise, when Microsoft sends its encrypted transmission from the United States to foreign OEMs, it admits that that transmission is "supplied from the United States." Pet. Br. 35. Thus, if the first copy of software that arrives via encrypted transmission is supplied from the United States, so too are all subsequent copies. It does not matter whether the physical source for installation is 1,000,000 separate disks for 1,000,000 separate computers; a single disk used 1,000,000 times to load the software onto 1,000,000 computers; or a single encrypted transmission, transmitting the software to 1,000,000 computers (simultaneously or seriatim). Regardless of where the installation occurred, the software code that is installed on the foreign medium via the golden master or the encrypted transmission was "supplied from" the United States.

When it suits its interests, even Microsoft acknowledges that the number of units it supplies is not limited by the number of golden masters it sends abroad. In *Microsoft Corp. v. Comm'r of Internal Revenue*, Microsoft argued that it was entitled to tax deductions under 26 U.S.C. § 927(a)(2)(B) for all foreign sales of software replicated from Microsoft's golden master abroad, claiming that such copies were "export property" under the statute. 311 F.3d 1178 (9th Cir. 2002). The Ninth Circuit, while recognizing that purely "intangible intellectual property" was not "export property," *id.* at 1185, agreed with Microsoft that all copies created from the golden master were export property, thereby providing Microsoft with another $31 million in claimed deductions for 1990 and 1991. *Id.* at 1182, 1189. Thus, just as golden-master copies of software are "exported" from the United States, they are likewise "supplied from" the United States.

Under any common-sense definition of "supplied from," the software that foreign OEMs install from either Microsoft's golden masters or its encrypted transmissions is

"supplied from the United States" and is subject to Section 271(f).

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In the end, Microsoft's position is a misdirected effort by the information technology industry (or one of its major components) to change patent law to satisfy its own perceived technological needs. In resisting the common-sense application of the statutory language to software, Petitioner is seeking a special rule for information technology, as opposed to other technology, without going through the required process of legislative debate and action. A basic and longstanding feature of the patent statute, however, is neutrality among technologies, except where Congress enacts particular provisions for particular technologies. There are no such provisions here, and so the natural meaning of the general statutory language applies. The language refutes Petitioner's position.

Microsoft and its *amici* have made policy arguments for limiting the infringement protection under Section 271(f), a statute designed for just what is occurring here—namely, taking all but the last step for infringement in the United States, then sending the result abroad for the trivial task of electronic mass reproduction. But such policy arguments are presented in the wrong forum. There plainly are strong countervailing policy arguments against just the kind of exploitation of domestic inventors that Section 271(f) targets. For academic institutions like *amici*, the protections of Section 271(f) have been and remain of particular importance. If Microsoft wants to end those protections for itself and other commercial sellers of software, it should make its case to Congress, which can fully air and scrutinize the policy debate. In the meantime, the coverage of Microsoft's software in this case is a straightforward

application of the statutory language in direct furtherance of the statutory policy.

CONCLUSION

For the foregoing reasons, the judgment of the court of appeals should be affirmed.

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MICROSOFT CORPORATION
Petitioner,

v.

AT&T CORP.
Respondent.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF *AMICUS CURIAE* YAHOO! INC. IN SUPPORT OF PETITIONER

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QUESTION PRESENTED

Whether, when thousands of copies of software are created abroad and installed abroad on thousands of computers, a "component" of a patented invention was "supplied ... from the United States" within the meaning of 35 U.S.C. § 271(f) for each computer merely because they are based on a single master copy of the software that was sent from the United States.

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INTEREST OF AMICUS CURIAE[1]

Yahoo! Inc. ("Yahoo!") and its subsidiaries provide services to more than 418 million individuals each month worldwide, and the company operates the world's most popular Internet destination. The company is a leading innovator in the computer and Internet sector, holds a wide array of patents relating to Internet communication, and also licenses technology patents both to and from third parties. From time to time, Yahoo! finds it necessary to enforce its own patent rights as well as to defend itself against allegations that it infringed a third party's patent. Accordingly, Yahoo!'s interest is in an efficient patent system that fairly rewards innovation.

The Federal Circuit's decision in this case will not advance innovation or efficiency. The statutory provision at issue, 35 U.S.C. § 271(f), bars the circumvention of United States patent law by shipping unassembled parts of a patented device abroad for assembly. But Section 271(f) does not extend to the export of models or instructions if components are created abroad based on those models or instructions. Nor should Section 271(f) be construed to generally export United States patent law, lest other countries attempt similarly to export their patent laws to the United States. A properly limited construction of Section 271(f), under which Microsoft is not an infringer for computers sold abroad under the facts of this case, avoids the inefficiency

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[1] Counsel for both parties have consented to the filing of this brief, and their consents have been filed with the Clerk of this Court. No counsel for any party authored this brief in whole or in part, and no person or entity, other than the named *amicus curiae* and its counsel, contributed monetarily to the preparation or submission of this brief.

that will result if multiple countries attempt to extend the reach of their patent laws beyond their respective borders.

PRELIMINARY STATEMENT

This case will be the first in which this Court addresses 35 U.S.C. § 271(f). Section 271(f)(1) provides that a person who "supplies ... from the United States ... the components of a patented invention... shall be liable as an infringer." The briefs of the parties and the government will contain detailed statements of the case, but two preliminary points bear emphasis.

First, while the "golden master disks" that Microsoft sometimes uses to convey its software to foreign manufacturers received the lion's share of attention in the briefs filed at the petition stage, the Federal Circuit's decision expressly applies to electronic transmission as well. The Federal Circuit specifically addressed Internet downloads, stating that "when a user downloads software from a server on the Internet, the server 'supplies' the software to the user's computer by transmitting an exact copy." Pet. App. 6a. The court went on to conclude that "whether software is sent abroad via electronic transmission or shipped abroad on a 'golden master' disk is a distinction without a difference for purposes of § 271(f) liability." *Id.* at 8a. This Court should be aware that the rule announced in this case could therefore extend United States patent liability to every corner of the globe where a copy of software originally developed in the United States is installed on end-user devices, regardless of how the copy is created.

We agree with the Federal Circuit that it should not matter whether software installed abroad on computers is obtained from a master disk or a download from the Internet. In either case, as explained in this brief, the relevant "component" for purposes of Section 271(f) is the software

together with the medium on which it was installed. It is only in this form that a specific component of an infringing device exists. In many cases today, that will be the computer's hard drive or a read-only-memory chip. When the hard drive or chip originates and remains overseas, it is not a "component" that was "supplied ... from the United States." And disembodied software originating from the United States is not a component either. Only when the software is encoded on a specific device does it become a component for the purposes of Section 271(f).

Our second preliminary observation – that Section 271(f) was enacted in response to a decision of this Court involving very different technology – supports that conclusion. The components of the shrimp deveining machines at issue in *Deepsouth Packing Co. v. Laitram Corp.*, 406 U.S. 518, 524 (1972), were all present in the United States prior to export. If they had been assembled in the United States, this would have been an act of patent infringement. In contrast, the software at issue in this case is intangible and unusable by any device until it is encoded on a machine-readable medium such as a specific hard drive or a chip, at which point it might become a single component of a single device. Unlike a machine part, disembodied software cannot be simply "snapped into place." This difference between the facts guiding Congress when it enacted Section 271(f) and the facts of this case makes it important to pay careful attention to the nature of the technology at issue.

"Software" is synonymous with "computer program," and a computer program is "a set of instructions . . . that directs a computer to perform specified functions or operations." *Fantasy Sports Props., Inc. v. Sportslines.com, Inc.*, 287 F.3d 1108, 1118 (Fed. Cir. 2002). A simple program instructing a computer to display "Hello!" on its

screen is provided in the margin.[2] But, of course, simply waving the footnote including those instructions at a computer would not cause it to display "Hello!" on its screen. Rather, before a computer can execute these instructions, they must be provided to the computer on a medium that it can "read." And for multiple computers to be able to execute the instructions simultaneously, each separate computer must have its own copy of the instructions installed onto it.

Over the years, a wide variety of media have been used to interact with computers. In the early days of computer

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[2] In the computer language "C," the source code reads:

```
#include <stdio.h>

int main()
{
   printf("Hello!\n");
   return 0;
}
```

The first line indicates where the output is to be displayed, while the rest of the code indicates what is to be displayed. The object code that the computer would "run," after the "source code" just listed were compiled or translated, might read (in part):

```
1011010100101101O
1010010010010001O
1010100101010111O
0101001001011010l
1110101010011100l
1010100101011111O
1010110110100100l
1010100011110101l.
```

programming, punch cards were employed as both storage media and input devices. In the 1980s and into the 1990s, floppy drives frequently performed storage and input functions. Today, programs are often electromagnetically encoded on a hard drive inside the computer. Alternatively, computer programming instructions may be encoded in more permanent fashion on read-only-memory chips, as in modern cell phones. Regardless of the medium employed, however, the point is the same – the instructions set forth in the software must be provided to each computer on an appropriate machine-readable medium in order for the computer to act on those instructions. The most straightforward reading of "component," in these circumstances, is the medium on which software is encoded together with the software – but not the unencoded software.

It is clear that shipping the parts of a shrimp deveining machine constitutes the "supply" of "components" within the meaning of Section 271(f). The components are the parts of the machine that were present in the United States and shipped abroad for assembly. Because additional copies of software code can be created so easily on a variety of media, it may seem a more difficult question whether a "component" was "supplied" from the United States when software is installed abroad on a computer. But the most straightforward application of the statute to the facts of this case supports the conclusion that no component that was ever in the United States became a part of an allegedly infringing computer.

SUMMARY OF ARGUMENT

Under Section 271(f), software sent abroad should not be considered a "component" until it is *encoded* in a machine-readable medium and *installed* on an allegedly infringing device. Under this reading of the statute, the software that Microsoft supplied from the United States in this case was not a "component" within the meaning of Section 271(f) – whether it was supplied by means of a master disk or an electronic transmission. Relatedly, because the processes required to encode and install the software on allegedly infringing devices took place overseas, the components were "supplied" abroad and not "from the United States" within the meaning of the statute.

A "component" is a "constituent part" of a machine. *See, e.g.*, Webster's Third New International Dictionary of the English Language 466 (1976). Instructions are not usually thought of as parts of machines. It would not make sense to say, for example, that instructions keyed into a microwave oven are a "component" of the oven. Likewise, in a cell phone that requires voice commands, it would make sense to call the earpiece a component; the display screen a component; the programmed chip inside the phone a component; but not the voice commands that activate the phone. Instructions, such as software, tell machine parts what to do; they are not themselves machine parts. Once software has been encoded on a medium and installed in a computer, it makes sense to talk about that particular physical embodiment of the program, encoded on a specific medium, as a "component" of that particular computer.

Accordingly, the initial question presented by this case is not whether software can *ever* be a "component" of an allegedly infringing device – it is *when* a particular program should be considered a "component" of that device. Imagine,

for example, a hard-copy print-out of a computer program or an optical disk containing software sitting beside a computer. It would be absurd to consider either a "component" of the device. A machine-readable copy of the software installed on a computer's hard drive or placed on a read-only-memory chip, however, *would* be a "component" as the term is commonly used. When the instructions are embedded in the machine parts whose actions they control, that particular copy of the instructions can be said to be part of a component. But not before they are embedded.

The software that Microsoft sends overseas, whether via electronic transmission or on a master disk, is not a "component" of any finished product. It is, rather, a single, uninstalled model. It is at some later point, when a copy of that software contained on some machine-readable medium has been created and installed on a computer, that a "component" of the device within the meaning of Section 271(f) has been created. At that point, the software is functional, and the computer can actually practice the claims of the patented invention. But before the software is in a form that it may be used by the computer, it is not reasonable to call it a "component" of the computer.

It follows that Microsoft did not "supply" any component from the United States within the meaning of Section 271(f) either. Rather, as the Solicitor General argued at the petition stage, the process of encoding and installing "components" took place abroad, so no components were "supplied ... from the United States."

The presumption against the extraterritorial application of United States law supports this reading of the patent statute. As this Court has stated, the presumption, which has long been applied in patent cases, serves to protect against unintended clashes between our laws and those of other

nations that could result in international discord. Here, the potential for international discord is very real: excessively expanding the reach of United States patent law may well offend foreign governments, interfere with the negotiation of international agreements, or motivate other countries to expand the reach of their patent laws into the United States. To the extent there is ambiguity, the presumption against exterritorial application of domestic law supports a construction of Section 271(f) that results in fewer applications of domestic patent law to devices sold and used in foreign countries.

ARGUMENT

I. THE MASTER COPY OF SOFTWARE MICROSOFT SENT ABROAD IS NOT REASONABLY CONSIDERED TO BE A "COMPONENT" OF THE ALLEGEDLY INFRINGING COMPUTERS.

The initial issue presented by this case is whether the software Microsoft sent abroad is a "component" within the meaning of Section 271(f). The Federal Circuit did not really engage with Microsoft's argument on that point. The court accorded only two sentences to its finding – based on *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325 (Fed. Cir. 2005) – that "software could very well be a 'component' of a patented invention for the purposes of § 271(f)." Pet. App. 4a. More specifically, the court in *Eolas* held that software "could" be a "component" under § 271(f) because the language of the statute is not limited to "machines" or "physical structures." 399 F.3d at 1339.

But that analysis misses the point in this case. The program that Microsoft sent abroad was simply a set of instructions, and instructions alone are not reasonably considered to be components. Instructions may be

represented in many different formats, including on paper. Plainly, however, a program written on paper is not a "component" of a computer – such a program would not be encoded in any format a machine could read, and certainly would not be a "part" of any device.

A program written on a master disk presumably *would* be readable by a computer under some circumstances. But placing the disk on top of a computer would not make it a "component" of the computer, any more than placing a cup of coffee on the computer would make *it* a "component." Being machine-readable in the abstract, in other words, is not enough. A component of a computer – a constituent part of the machine – must be capable of being used by the computer. The master disk *would* be a single component of the single computer if it were permanently installed on that computer. But that is not what happens with a master disk. Instead, the information on the master disk is copied onto some other medium installed on computers. Only such an embodied copy of software is appropriately viewed as a component of a computer.

That is illustrated by contrasting a master disk to the components of the deveining machines at issue in *Deepsouth*. The parts of a deveining machine shipped from the United States plainly became components of the deveining machines used in foreign countries. Indeed, once assembled, the parts shipped from the United States *are* the machines, and the parts for one machine make only one machine. To create 100 machines, 100 sets of parts must be sent from the United States. But a master disk is different. It does not become a part of an infringing device. After the software on a master disk is copied, the master disk may be sent to other locations, possibly in other countries, and copied again. It would not make sense to consider a master disk to be a component of each of those computers. The parts of a deveining machine,

in contrast, cannot be separated from the machine of which they become a part.

It does make sense, however, to consider the *individual copy* made from the master disk that is installed on a computer to be a component of the computer on which the copy is installed – but that shows that the copy, rather than the master disk, is the relevant "component" within the meaning of Section 271(f). If a model or mold of a part of a deveining machine were sent abroad and duplicated, the components of the resulting machines would plainly have been made abroad rather than supplied from the Untied States. The model or mold itself would not be considered a component of the resulting machines.

In other words, taking a master disk and copying the instructions on the disk onto the hard drive of a computer – *installing* the software – changes the nature of the relationship between the software and the computer. Installation makes the software a part of the computer, at least until the software is uninstalled. The software together with the medium on which it has been installed is appropriately viewed as the relevant component of the computer.

The same is true for electronic downloads, although the elegance of today's technologies superficially obscures lines that would have been clearer at the time of Section 271's enactment. At that time, programmers frequently wrote out their programs on special forms called coding sheets. Clearly, however, coding sheets sent abroad from the United States in those days would not have been "components" of computers manufactured abroad within the ordinary English meaning of that term. But that is essentially what Microsoft did here when it distributed software electronically rather than on a master disk – it sent the underlying software, not any constituent part of a computer, abroad. The software was

encoded on a machine-readable medium abroad, just as the information on the coding sheets would have been transferred to components abroad. The software was not usable until it was encoded on a machine-readable medium and installed on the computer, and it does not make sense to think of instructions as components until they are put into a form that a computer can use.

Other illustrations involving today's technology make the same point. A hard-copy printout of a computer program for the fuel-injection control of an automobile mailed from the United States would not be a considered a "component" of a car manufactured abroad. The print-out simply could not be considered a "constituent part" of the car. Nor would a disk containing that software sent from the United States and placed on the front seat of the car be a "component." But if a foreign manufacturer were to embed the software in a chip and incorporate the chip into the automobile, that chip would be a "component" of the car. It would not make sense, however, to think of the fuel-injection control software as a component until it was embedded in a chip.

In short, the software Microsoft sent abroad should not be considered a "component" of the foreign-built computers, whether the software was sent by means of master disks or electronic transmission. The software was copied and encoded abroad on machine-readable devices which were then installed in the computers. Those parts – the hard drive with the software installed on it or the read-only-memory chip with the software copied onto it – are the "components" of the computers. But the software sent abroad by Microsoft is not.

The Federal Circuit's contrary rule makes software a component when it is not a part of a computer or even in a form that it can be used by a computer. Its rule also leads to

the counter-intuitive result that a single copy of software – which is all that Microsoft sends abroad on a master disk or encrypted electronic transmission – is said to be a component of each of the thousands of computers on which copies of its instructions are ultimately encoded. But Section 271(f) was not enacted to lead to such a result. It is most sensibly construed to mean that one component must be exported from the United States for every allegedly infringing device created abroad.

Accordingly, if a software company encodes software on a machine-readable medium in the United States and sends multiple copies of the resulting disks or chips abroad where each is to be made a constituent part of a computer, it will have violated Section 271(f) if the software infringes a patent. But if the company merely sends software – design information comparable to a blueprint or a mask that is not in a form in which it can be used by a computer – it has not. That interpretation squares with Congress's goal in enacting Section 271(f), since it is clear that Congress intended to prohibit the export of the parts of a machine that could be assembled abroad but did not intend to prohibit the export of design information.

Like the decision below, the Solicitor General's brief at the petition stage missed the key point with respect to the "component" issue. Neither we nor Microsoft argue that software cannot, in any form, be a "component" of a device within the meaning of Section 271(f). In our view, the software Microsoft sends from the United States to foreign countries – where a copy is then installed on computers destined for foreign markets – is not a "component" of the finished device. Rather, it is the software together with the

medium on which it is encoded that is appropriately considered to be a "component" of those computers.[3]

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[3] Many Internet companies distribute their software in a manner that is different than the distribution system Microsoft uses for its Windows software. Rather than using a master disk or master electronic transmission, users may obtain products individually. For example, consider a person in Germany who downloads instant messaging software. Although the download may take only a matter of minutes to install if the user has a high-speed connection, the instructions obtained from the company's server, perhaps located in the United States or perhaps another country, are transformed in multiple steps and finally encoded onto the user's hard drive in Germany. The German user then launches the copy of the installation program he has made. The execution of that installation program, which actually creates the executable copy of the messaging application residing on the user's computer hard drive, will vary depending on the individual computer on which the software will be installed. For example, the installation program will take a different course if prior versions of the software have been downloaded to the computer and also will vary depending on whether the user wants the messaging software application to be set as his default messaging program. Similarly, if the computer generally uses German rather than English, the installation may be in German rather than in English. The software is not usable until those transformations have been completed and the appropriate instructions for the particular computer have been installed on the hard drive of the user's computer. As those different steps illustrate, the resulting component – the instant messaging instructions installed on a computer in Germany –

II. THE COMPONENT INSTALLED ON THE ALLEGEDLY INFRINGING COMPUTERS WAS NOT "SUPPLIED" FROM THE UNITED STATES.

The second question presented by this case is whether the components installed on the allegedly infringing computers were "supplied" from the United States. At the petition stage, the Solicitor General – like Judge Rader, dissenting below – concluded that Microsoft did not "supply" a component from the United States, but agreed with AT&T's position on the "component" issue.

In its response to the government's brief at the petition stage, AT&T argued that the Solicitor General's position on the "supply" issue is inconsistent with its rejection of Microsoft's "component" argument. Distilled to its essence, AT&T's argument appears to be that Microsoft necessarily supplied components from the United States because the software Microsoft sent abroad and the copies installed on the allegedly infringing computers are really the same thing. That argument is wrong, in our view, because the relevant "constituent part" or "component" of the infringing computers is the particular functional copy of the software together with the machine-readable medium in the computer on which it was encoded. That component was created abroad, and hence supplied abroad, because each copy of Microsoft's software was installed on a medium in the allegedly infringing computers abroad.

As the government suggested, U.S. Cert. Br. at 13, its view of the "supply" issue accords with the Federal Circuit's recent ruling in *Pellegrini v. Analog Devices, Inc.*, 375 F.3d

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is created abroad, using instructions developed in the United States or another country.

1113 (Fed. Cir. 2004). There, the court reasonably concluded that components manufactured outside of the United States do not trigger liability under Section 271(f). *See, e.g., id.* at 1118 (accepting Analog's "defense [to the Section 271(f) claim] based on ... extraterritorial manufacture"). Here, as the Solicitor General pointed out, U.S. Cert. Br. at 13, the "fast and inexpensive" nature of the process by which its software is encoded and installed should not obscure the fact that it takes place abroad.

Indeed, today the process of encoding software on a machine-readable medium and installing it on a computer may take only seconds. But at the time that Section 271(f) was adopted, that same process often involved laboriously creating a deck of punch cards based on written coding sheets, transferring the data on that deck to magnetic tape, and then installing that tape on a computer's magnetic tape reader. At that time, it would have been obvious that the relevant "component" was manufactured abroad and was not "supplied" from the United States.

We acknowledge that the encoding and installation process on which the Solicitor General based his conclusion that components of the infringing computers were not "supplied" from the United States in this case is also the basis for our position that the master software supplied by Microsoft is not appropriately viewed as a "component" of the infringing computers. Accordingly, we agree with AT&T that the Court should reach the same result whether it focuses on the "component" issue or the "supply" issue. But in our view, the Court should hold that Microsoft is not liable under Section 271(f) when it sends a master copy of its software abroad, where the software is encoded onto a machine-

readable medium and installed on allegedly infringing computers.[4]

III. THE PRESUMPTION AGAINST THE EXTRATERRITORIAL APPLICATION OF UNITED STATES LAW SUPPORTS REVERSAL OF THE FEDERAL CIRCUIT'S DECISION.

As the government wrote in its brief at the petition stage, "[i]f there were any doubt about the proper interpretation of Section 271(f), the presumption against extraterritoriality would resolve it." U.S. Cert. Br. at 16. This Court has, of course, long held "that legislation of Congress, unless a contrary intent appears, is meant to apply only within the territorial jurisdiction of the United States." *EEOC v. Arabian Am. Oil Co.*, 499 U.S. 244, 248 (1991) ("*Aramco*") (quoting *Foley Bros., Inc. v. Filardo*, 336 U.S. 281, 285 (1949)). This Court has long held that this canon of construction applies to patent law, which "makes no claim to extraterritorial effect." *Deepsouth*, 406 U.S. at 531; *see Brown v. Duchesne*, 60 U.S. (19 How.) 183, 195 (1857) (The patent laws "do not, and were not intended to, operate

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[4] Such a holding would not call into question the Federal Circuit's decision in *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282 (Fed. Cir. 2005). The issue in that case was whether a patented invention was "used" in the United States under 35 U.S.C. § 271(a) when customers using BlackBerry devices were located in the United States but the control point of the BlackBerry Relay system was located in Canada. In our view, the Federal Circuit sensibly concluded in this particular patent case that the infringing use occurred where the infringing device was used, even if a part of the system employed by the infringing device was located in Canada.

beyond the limits of the United States.") Extraterritorial application of patent law "is strongly disfavored and risks interfering with the sovereignty of the other country into whose territory the rights holder is reaching." Timothy R. Holbrook, Extraterritoriality in U.S. Patent Law (November 10, 2006) at 2, available at http://ssrn.com/abstract=944157.

Moreover, the principles underlying the presumption apply even when the issue is not simply whether Congress intended a statutory provision to apply beyond our nation's borders. In *F. Hoffmann-LaRoche Ltd. v. Empagran S.A.*, 542 U.S. 155 (2004), the statute at issue expressly applied to anticompetitive conduct occurring abroad. But because "this Court ordinarily construes ambiguous statutes to avoid unreasonable interference with the sovereign authority of other nations," *id.* at 164, it construed the statute to apply only when the foreign acts caused significant domestic injury and not when the foreign acts caused foreign harm only. In this case, a construction of Section 271(f) that limits the interference caused abroad by U.S. patent law is supported by these principles. Accordingly, to the extent the Court believes that the provision could be read to provide for liability when a company sends software abroad, it should reject that construction in favor of a narrower interpretation that imposes liability only when multiple copies of software are exported, each on a machine-readable medium that is then installed abroad on a computer.

AT&T argued in its Supplemental Brief at the petition stage that, as a policy matter, requiring plaintiffs to pursue patent recovery under foreign law imposes "needless transaction costs on holders of U.S. patents" without serving any policy goal. AT&T Supp. Br. at 6. Not so. This Court has repeatedly recognized a fundamental policy basis for the presumption against extraterritoriality that goes well beyond concern for the location of the conduct involved.

Specifically, the presumption reflects an aspect of the doctrine of international comity, which Justice Scalia has described as the "the respect sovereign nations afford each other by limiting the reach of their laws." *Hartford Fire Ins. Co. v. California*, 509 U.S. 764, 817 (1993). Consistent with that doctrine, this Court has stated that the presumption against extraterritoriality "serves to protect against unintended clashes between our laws and those of other nations which could result in international discord." *Aramco*, 499 U.S. at 248.

Here, the potential for "international discord" is very real: excessively expanding the reach of United States patent law may well offend foreign governments and thus interfere with the negotiation of international agreements. For example, the extent to which software is patentable varies from nation to nation, and there are differences even between countries in the European Union. *See* Additional Development: *European Union Software Patent Proposal*, 21 Berkeley Tech. L.J. 183 (2006) (noting failure of legislation that would make software patentability uniform across the European Union). These nations are actively engaged in deciding how and under which circumstances software should be patentable. Interference with their carefully made decisions is unlikely to be eagerly welcomed.[5]

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[5] A broad reading of Section 271(f) would present complications even when other nations provide strong patent protection for software. Providing another forum where the patent holder can seek recovery encourages forum shopping and can create litigation complications if the patent holder brings multiple suits against different entities. For example, many foreign systems use "first-to-file" rules, while the United States uses "first-to-invent" rules. Thus, it is possible that the holder of the foreign patent may be different than the

Extraterritorial applications of United States patent law may also motivate other countries to reciprocate in kind. As a result, American companies could end up facing liability for infringement under foreign patent laws for acts performed wholly in the United States. This Court should be careful to avoid any ruling that could launch such a process of escalation.

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holder of the United States patent for the same invention. A narrower reading of Section 271(f) would limit the circumstances in which issues would be raised concerning how to reconcile liability to different patent holders if, for example, Microsoft's software infringed a patent held in the United States by AT&T and a patent held in Germany by a German telecommunications company with respect to computers sold in Germany. Moreover, it could be the case that Microsoft held the patent in Germany, and it would seem odd for it to be liable to AT&T for computers sold there, where it held the relevant patent. *See* Holbrook, Extraterritoriality in U.S. Patent Law, at 49-50.

CONCLUSION

The judgment of the Federal Circuit should be reversed.

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